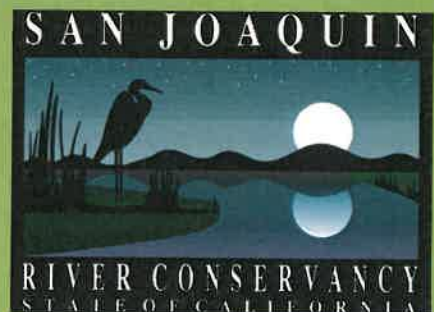
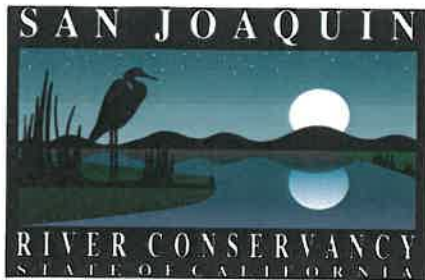


BOARD MEETING REMINDER

The **May 2, 2018**, Board meeting begins at **10:00 a.m.** at the **Fresno Metropolitan Flood Control District Board Room**

Please note the earlier seasonal starting time, **March through November.**





250.20

STATE OF CALIFORNIA
Edmund G. Brown, Jr., Governor

5469 E. Olive Avenue
Fresno, California 93727
Telephone (559) 253-7324
Fax (559) 456-3194
www.sjrc.ca.gov

GOVERNING BOARD

Brett Frazier, Chairperson
*Supervisor,
Madera County Board of Supervisors*

William Oliver, Vice-Chairperson
Councilmember, City of Madera

Andreas Borgeas, *Supervisor
Fresno County Board of Supervisors*

Steve Brandau
Councilmember, City of Fresno

Kacey Auston, *Director, Fresno
Metropolitan Flood Control District*

Carl Janzen, *Director
Madera Irrigation District*

Julie Vance, *Regional Manager
Department of Fish and Wildlife*

Kent Gresham, *Sector Superintendent
Department of Parks & Recreation*

John Donnelly, *Executive Director
Wildlife Conservation Board*

Julie Alvis, *Deputy Assistant Secretary
Natural Resources Agency*

Jennifer Lucchesi, *Executive Officer
State Lands Commission*

Karen Finn, *Program Budget Manager
Department of Finance*

Bryn Forhan
Paul Gibson
Vacant
Citizen Representatives

Melinda S. Marks
Executive Officer

SAN JOAQUIN RIVER CONSERVANCY

The San Joaquin River Conservancy Governing Board
will hold a regular meeting on
Wednesday, May 2, 2018,
commencing at **10:00 a.m.**

Board Meeting Locations:
Fresno Metropolitan Flood Control District
5469 E. Olive, Fresno CA 93727
and the following location is available to Board members
and the public for participation via teleconference:
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

MEETING AGENDA

CALL TO ORDER & PLEDGE OF ALLEGIANCE

A. ROLL CALL

B. PUBLIC COMMENT & BUSINESS FROM THE FLOOR

The first ten minutes of the meeting are reserved for members of the public who wish to address the Conservancy Board on items of interest that are not on the agenda and are within the subject matter jurisdiction of the Conservancy. Speakers shall be limited to three minutes. The Board is prohibited by law from taking any action on matters discussed that are not on the agenda; no adverse conclusions should be drawn if the Board does not respond to the public comment at this time.

C. ADDITIONS TO THE AGENDA

Items identified after preparation of the agenda for which there is a need to take immediate action. Two-thirds vote required for consideration. (Gov. Code § 54954.2(b)(2))

D. POTENTIAL CONFLICTS OF INTEREST

Any Board member who has a potential conflict of interest may identify the item and recuse themselves from discussion and voting on the matter. (FPPC §97105)

E. MINUTES

E-1 Approve Minutes of April 11, 2018

F. CONSENT CALENDAR

All items listed below will be approved in one motion unless removed from the Consent Calendar for discussion:

F-1 Distribution of Habitat Restoration Opportunities Analysis for the San Joaquin River Parkway, Ball Ranch and Willow Unit, Prepared by River Partners (February 2017)

DISCUSSION

G-1 Report for Informational Purposes by Central Valley Community Foundation on the "Fresno Clean and Safe Neighborhood Parks Initiative," a Potential Local Sales Tax Measure to Fund Parks, Trails, and Recreation Programs in Fresno

G-2 Report for Informational Purposes on County of Fresno Project to Replace the North Fork Bridge on the San Joaquin River in Friant, and Status Report on Demolishing the Derelict Bridge Remnants Near the Same Location

G-3 Status Report for Informational Purposes on Assembly Bill 3218, Authored by Assemblymember Dr. Joaquin Arambula

G-4 Authorize Bond Funds and a Grant to the San Joaquin River Parkway and Conservation Trust to Contribute to the Coke Hallowell River Center Public Access Improvements Project

H. ADMINISTRATIVE AND COMMITTEE REPORTS

H-1 Organizations

If time allows, the following oral reports will be provided for informational purposes only, and may be accompanied by written reports in the Board packet. No action of the Board is recommended.

H-1a San Joaquin River Parkway and Conservation Trust

H-1b RiverTree Volunteers

H-2 Deputy Attorney General

H-3 Executive Officer

H-3a River West Fresno, Eaton Trail Extension Work Group, Report on Meeting of April 23, 2018

H-4 Board Members' Reports

I. EXECUTIVE SESSION

Before convening in closed session, members of the public will be provided the opportunity to comment on Executive Session agenda items.

None.

J. NOTICE OF BOARD, ADVISORY, AND PUBLIC MEETINGS

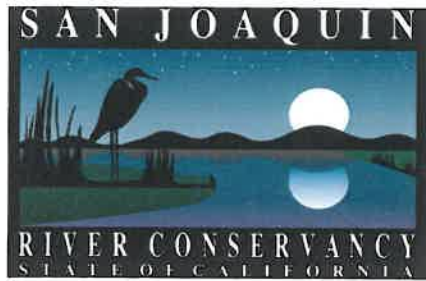
None.

K. NEXT BOARD MEETING DATE

The next Board meeting will be held June 6, 2018. **Please note the earlier starting time of 10:00 a.m. for meetings in February through October.**

L. ADJOURN

Board meeting notices, agendas, and approved minutes are posted on the Conservancy's website, www.sjrc.ca.gov. For further information or if you need reasonable accommodation due to a disability, please contact Jasanjit Bains at (559) 253-7324 or Jasanjit.Bains@sjrc.ca.gov.



250.20

STATE OF CALIFORNIA
Edmund G. Brown, Jr., Governor

MINUTES
SAN JOAQUIN RIVER CONSERVANCY

Governing Board
Wednesday, April 11, 2018,

Board Meeting Locations:

Fresno Metropolitan Flood Control District
5469 E. Olive, Fresno CA 93727
and
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

MEETING AGENDA

CALL TO ORDER & PLEDGE OF ALLEGIANCE

Chairman Frazier called the meeting to order at 10:02 a.m. Mr. Brandau led the pledge of allegiance.

A. ROLL CALL

5469 E. Olive Avenue
Fresno, California 93727
Telephone (559) 253-7324
Fax (559) 456-3194
www.sjrc.ca.gov

GOVERNING BOARD

Brett Frazier, Chairperson
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Julie Alvis, *Deputy Assistant Secretary*
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Jennifer Lucchesi, *Executive Officer*
State Lands Commission

Karen Finn, *Program Budget Manager*
Department of Finance

Bryn Forhan
Paul Gibson
Vacant

Citizen Representatives

Melinda S. Marks
Executive Officer

Name	Present	Telecon- ference	Absent	Late
Mr. Frazier	X			
Mr. Oliver	X			
Mr. Borgeas			X	
Mr. Brandau	X			
Ms. Auston	X			
Mr. Janzen	X			
Ms. Alvis	X			
Mr. Hatler	X			
Mr. Gresham	X			
Mr. Donnelly		X		
Ms. Lucchesi		X		
Ms. Finn		X		
Ms. Forhan	X			10:02 a.m.
Mr. Gibson	X			

Ms. Bains confirmed a quorum was present.

Legal Counsel Present: Michael Crow, Deputy Attorney General (via teleconference)
Christina Morkner Brown, Deputy Attorney General

Staff present: Melinda Marks, Executive Officer
Rebecca Raus, Associate Governmental Program Analyst
Jasanjit Bains, Staff Services Analyst
Heidi West, Program Manager, San Joaquin River Conservancy
Projects, Wildlife Conservation Board

B. PUBLIC COMMENT & BUSINESS FROM THE FLOOR

The first ten minutes of the meeting are reserved for members of the public who wish to address the Conservancy Board on items of interest that are not on the agenda and are within the subject matter jurisdiction of the Conservancy. Speakers shall be limited to three minutes. The Board is prohibited by law from taking any action on matters discussed that are not on the agenda; no adverse conclusions should be drawn if the Board does not respond to the public comment at this time.

Mr. Richard Fairbank, a member of the public, asked if there will be public comment on item G-1. Chairman Frazier confirmed there would be.

Ms. Forhan arrived at 10:02 a.m.

C. ADDITIONS TO THE AGENDA

Items identified after preparation of the agenda for which there is a need to take immediate action. Two-thirds vote required for consideration. (Gov. Code § 54954.2(b)(2))

There were no additions to the agenda. Chairman Frazier suggested, because a quorum is needed for the Closed Session and the meeting might take time, the Closed Session would take place after Agenda Item G-1.

D. POTENTIAL CONFLICTS OF INTEREST

Any Board member who has a potential conflict of interest may identify the item and recuse themselves from discussion and voting on the matter. (FPPC §97105)

There were none.

E. MINUTES

E-1 Approve Minutes of February 7, 2018

Mr. Oliver moved to approve the meeting minutes from the February 7, 2018, Board meeting as written; Ms. Forhan seconded the motion.

ROLL CALL VOTE:

Name	Yes	No	Abstain
Mr. Frazier	X		
Mr. Oliver	X		
Mr. Brandau	X		
Ms. Auston	X		
Mr. Janzen	X		
Mr. Hatler	X		
Mr. Gresham	X		
Mr. Donnelly	X		
Ms. Alvis	X		
Ms. Lucchesi	X		
Ms. Finn	X		
Ms. Forhan	X		
Mr. Gibson	X		

The meeting minutes for February were approved unanimously.

F. CONSENT CALENDAR

All items listed below will be approved in one motion unless removed from the Consent Calendar for discussion:

F-1 Authorize Agreements for Fire Prevention/Weed Abatement on Specific Conservancy Properties

Staff recommendation: It is recommended the Board authorize fire prevention, weed abatement and fuel-load reduction agreements for various Conservancy properties as specified below

F-2 Authorize an Agreement with the City of Fresno to Support the Life and Environmental Sciences River Excursions Program

Staff recommendation: It is recommended the Board authorize an agreement for services not to exceed \$11,000 with the City of Fresno Parks, After-School, Recreation, and Community Services Department (PARCS) to provide specified community education and recreation programs on Conservancy lands.

A motion was made by Mr. Gibson to approve the Consent calendar items. The motion was seconded by Ms. Forhan.

ROLL CALL VOTE:

Name	Yes	No	Abstain
Mr. Frazier	X		
Mr. Oliver	X		
Mr. Brandau	X		
Ms. Auston	X		

Mr. Janzen	X		
Mr. Hatler	X		
Mr. Gresham	X		
Mr. Donnelly	X		
Ms. Alvis	X		
Ms. Lucchesi	X		
Ms. Finn	X		
Ms. Forhan	X		
Mr. Gibson	X		

The motion passed unanimously. The Consent Calendar items were approved.

G. DISCUSSION

- G-1** Adopt Resolution 18-01 Certifying the San Joaquin River Parkway Master Plan Update Final Environmental Impact Report, and Approving the Proposed Plan, Including Adoption of Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program
SCH No. 2013061035

Staff recommendation: After providing an opportunity for public comment, it is recommended the Board consider the San Joaquin River Parkway Master Plan Update (proposed Plan or proposed Project) Final Environmental Impact Report (EIR) and adopt the proposed Resolution 18-01 to:

1. Certify the Final EIR was completed in compliance with CEQA, was presented to the Board, which reviewed and considered the Final EIR information, and reflects the Board's independent judgement, in accordance California Environmental Quality Act (CEQA) Guidelines Section 15090; and
2. Approve the proposed Plan, including Resolution 18-01 exhibits presenting the necessary Findings of Fact and Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program, in accordance with CEQA Guidelines Sections 15091, 15092, and 15097.

Ms. Marks introduced Ms. Christina Morkner Brown, Deputy Attorney General, who will be participating as legal counsel since the California Environmental Quality Act (CEQA) is one of her areas of expertise, and introduced Steve Noack, of Placemarks, the project manager for completion of the FEIR. Ms. Marks noted that Mr. Crow, legal counsel, will also be participating via teleconference.

Ms. Marks informed the Board that agenda item G-1 recommends the Board approve Resolution 18-01, which certifies the FEIR and approves the proposed updated Master Plan. The Resolution, which includes the Findings, Statement of Overriding Considerations, and the Mitigation Monitoring and Reporting Program were provided to the Board prior to the meeting. The proposed Project updates the existing Master Plan which was adopted in December 1997. It guides at a policy level the future improvements to the Parkway, and presents goals, policies, guidelines, best management practices and conceptual projects and opportunities. The updated plan identifies what is existing in the Parkway and presents opportunities that might become available to implement the Parkway. The Plan does not include site-specific review; it is a program level, plan level document. The updated Master Plan includes almost all of the 1997 policies, which are the foundation of the Plan and Parkway projects to date. New policies are shown in bold in the

updated Plan. New illustrations show lands that have been acquired for the Parkway. Lands that are not publicly owned or plans that have not been approved are identified as “opportunities.” The Board reviewed all of the proposed policies 2013, and those became the policies that were reviewed in the EIR. The policies guide Parkway development, but the Board maintains its authority and discretion in applying those policies to specific projects. The Conservancy only acquires lands and easements on a willing buyer-willing seller basis; the Plan is a guidance document and does not identify lands that will be acquired, if there are not successful negotiations to acquire those properties. For figures 5-1 through 5-12 of the Plan, illustrated in black are uses that already exist, in grey are uses things that are planned and already approved, and in white shows opportunities that might be possible—these are a vision, but are not directive. As noted on the figures, the locations of all Parkway facilities are subject to acquiring property or easements from willing sellers, site-specific and project-specific design, environmental review, and public participation.

Steve Noack, Principal with Placeworks and the Project Manager and Principal for the EIR summarized the EIR process. He indicated the information in the EIR does not dictate outcome or approval of a project, it discloses the environmental impacts. Mitigation measures are prescriptive measures that are utilized when future projects are developed. Once a programmatic level EIR is adopted future projects can be reviewed through a more streamlined CEQA review process. The EIR shapes future projects and any mitigation measures that are required to approve those projects. The Notice of Preparation for the EIR was released in 2013, and staff received comments from interested parties regarding the issues that should be analyzed. The Draft EIR was released last spring for a 60-day public review. Upon receipt of the comments, the FEIR was prepared, including responses to comments. Now, the Board holds its hearing for certification of the FEIR. In the FEIR, there were 79 impact topics where the Plan would result in no impact or less than significant impacts; no mitigation measures are required. There were 12 potentially significant impacts that were reduced to less than significant through the recommended mitigation measures. There were a number of impacts that are assumed to result in significant unavoidable impacts, primarily because the potential for impacts cannot be fully evaluated on programmatic level. Resolution 18-01 includes in the exhibit a Statement of Overriding Considerations, stating the benefits that will be achieved by the project that outweigh these potential impacts. The EIR must be certified by the lead agency as presented in the Resolution, in order to approve the proposed Plan.

BOARD COMMENTS:

Mr. Oliver thanked Mr. Noack for the presentation and mentioned the importance and value of the EIR. He inquired about the prolonged time frame of the environmental review. Ms. Marks responded that there were many draft documents—biological assessments, cultural resources assessments, other appendices, transportation analysis, a programmatic level EIR. It was a large workload for the Conservancy staff, and the early unwieldy drafts of the DEIR took a lot of time for extensive review. Ms. Heidi West of the Wildlife Conservation Board provided a great deal of expertise and assistance. The last year, this project was put on hold, so that the environmental review of the River West project could be resolved.

Mr. Gibson inquired about the commenters on the FEIR and asked who they were. Ms. Marks read from the list of commenters from Chapter 4 of the FEIR. Ms. Marks stated she appreciates the public involvement. All responses to comments are located in Chapter 5 of the FEIR.

Mr. Janzen stated, as we move forward, things change; the Conservancy might find that the potential loss of farmland due to the Parkway might not be as significant as it appears today. Mr. Noack responded that the FEIR provides flexibility. The Conservancy would look at the need for

providing mitigation on a project-specific basis and could recognize any changes in conditions over time.

Mr. Janzen expressed concern that the biological resources mitigation measures might be overly protective in some instances. Ms. Marks responded that all biological measures are written based on the current list of endangered/threatened/protected species, and during project-specific review it would be determined if they occur at the site. The measures are written to first avoid impacts if possible. EIRs are costly documents. If all of the conditions that might happen for a future project have already been considered in the Parkway Master Plan Programmatic EIR, the Board may be able to proceed with the project, provided the appropriate mitigation measures that are on the list are implemented. It helps make future work a little easier.

PUBLIC COMMENTS

Mr. Richard Fairbank, a Fresno resident representing Mr. Zinkin who has property at the river bottom, stated he had reviewed the Master Plan and EIR looking for anything that regulate or place limitations pertaining to privately owned properties, as opposed to plans that addressed the use and development of Conservancy land. He did not find anything that would regulate private land and requested clarification as to whether that is in fact the case. Ms. Marks confirmed that the Conservancy does not have land use authority over private lands. In fact, some of the older policies that implied that Parkway policies would apply to private lands are re-worded in the proposed Master Plan to make it clear that the policies apply to the lands that are owned by the State/Conservancy.

Mr. Fairbank added he is not in opposition to approval of the Master Plan.

Mr. Bill Skinner, representative for MACTRA and Golden Bear companies, presented two comment letters to the Board. Mr. Skinner read from the letter from MACTRA, expressing concerns that the boundaries of the Parkway have not been adequately mapped or analyzed and raising concerns about recreational trails being incompatible uses in some locations. The letter expressed that transportation and traffic were not adequately addressed. He requested a continuance of the hearing and that no action be taken until the issues in the letter have been addressed and responded to.

Chairman Frazier asked if there were other commenters. There were none. Mr. Frazier closed the public comment portion for the agenda item, and asked staff to respond to issues raised.

Ms. Marks noted that the letter commented on the lack of detail in the Plan maps. The Master Plan maps are illustrations, including a vision of what could occur if the Conservancy acquires certain lands. The letter circled items on maps 2 of 7 and 3 of 7 of the FEIR (maps in chapter 5 of the Master Plan) and raised concerns about a possible trail illustrated traversing the Dragonfly Golf Course. When the golf course was approved by the County of Madera, the purple area adjacent to the golf course was quit-claimed to the State Lands Commission for the purpose of maintaining public rights to access the river through state trust lands. There was also a trail easement that was dedicated as a result of Madera County approval; it is shown bisecting the golf course. It is recognized that the easement could not be safely exercised in the alignment shown. The property owners would need to be involved in order to relocate the easement and implement a trail.

Mr. Frazier inquired about whether the Conservancy could guarantee that the trail would not go through the golf course, if it is not addressed in the EIR. Ms. Marks stated that in order to

implement the trail, there would also need to be project-level review; due to safety issues the trail would have to be realigned.

Mr. Thomas Skinner, a representative of MACTRA, stated their concern is that the dotted line might become a plan line for a multi-use trail, and that consistency with that plan would be enforced by the County if the owners applied for land use entitlements in the future.

Mr. Frazier asked staff if there is a way to have the line removed.

Ms. Marks mentioned the line represents an opportunity for a secondary hiking trail which has not been approved by the board. In 2003, the Conservancy, agency, and then-owners of the golf course participated actively in developing an alignment for the secondary trail; that alignment is now illustrated on the Master Plan. If the line is on private property, it's just an illustration of a possibility.

Mr. Gibson inquired about whether the Conservancy owns the trail easement that is shown on the map. Ms. Marks stated she was unsure to which entity the trail easement traversing the golf course was dedicated to.

Mr. Gibson stated the Conservancy can only build on easements that the public owns. If the Conservancy does not own the easement, it cannot build a trail on the easement. Ms. Marks added that the easement was dedicated before she started working for the Conservancy, but she believed the easement exists; in any case, the trail would need site-specific analysis and is not a part of what the Board would be adopting today.

Ms. Morkner-Brown added there were no comments received on this issue before this letter submitted today. We do not have the easement documents available to review today.

Ms. Forhan stated that the Draft EIR was out for review in 2017; was there no communication with the golf course property owners?

Ms. Marks responded that she had been in close communication over the years and as recently as last year with Mr. Dave Brodie, representing the property owner at the time. Mr. Brodie has been on the agenda distribution list and has been attending the meetings until recently. She had not been made aware of a change in title in the time since her last communications with Mr. Brodie.

Mr. Skinner stated there was a title change in 2014, and that Mr. Brodie retired and is no longer associated with the golf course. MACTRA took over in 2013. Mr. Skinner requested that if the trail traversing the golf course as shown on page 6 of their letter is not a part of the plan, the Conservancy should take it off the map.

Mr. Donnelly inquired about the map in reference. (There was a loss of internet connection, the GoTo Meeting was not connected.) Ms. Marks referred him to Figure 5-6 area 3 of 7 in the proposed Master Plan. She noted that if the public owns the easement, whether it is shown on the map or not, the easement can be exercised. Removing the line as requested would not affect the proposed action today.

Mr. Skinner stated there is no easement that shows up on the property title report. If there is an easement that was not recorded, they would like the records.

Mr. Frazier suggested through the motion today the Board could remove the referenced line and engage with the property owner and its designees to research the easement.

Ms. Marks reiterated that the lines are merely illustrations. If they are on private property and there is no public right-of-way, then they are only illustrations and do not carry any regulatory weight.

Mr. Crow added that, although it was a long time ago, he recalled an easement associated with a quit-claim deed following a survey by the State Lands Commission. If there is an easement, but it was not recorded, that does not mean the easement is invalid. The easement may still exist.

Ms. Marks reiterated the Master Plan is not a regulatory document; the Conservancy does not have land use authority over private lands. She proposed to strike the line in question and will follow up with additional research of the easement in question.

Mr. Gibson suggested, if there is an easement, Mr. Skinner might want to notify his title insurance provider and review the statements on the title policy. The company can research that information.

Ms. Morkner-Brown concurred that this plan is not regulatory—it is not a zoning restriction, it's not a mandatory policy, all the lines are illustrative, conceptual and subject to future CEQA review, acquisition and development. The Board may choose to erase this particular line, but also note that all of the lines shown are not imposing any restriction or assuming specific development.

It was moved by Mr. Gibson to approve the Resolution 18-01 [certifying the San Joaquin River Parkway Master Plan Update Final Environmental Impact Report (FEIR), and approving the proposed Plan, including adoption of Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program] and, with regard to map 3 of 7 of the FEIR [and as the same map is shown in the Master Plan], the “yellow line” referencing an area across Dragonfly Golf Course shall be removed. The motion was seconded by Mr. Oliver.

ROLL CALL VOTE:

Name	Yes	No	Abstain
Mr. Frazier	X		
Mr. Oliver	X		
Mr. Brandau	X		
Ms. Auston	X		
Mr. Janzen	X		
Mr. Hatler	X		
Mr. Gresham	X		
Mr. Donnelly	X		
Ms. Alvis	X		
Ms. Lucchesi	X		
Ms. Finn	X		
Ms. Forhan	X		
Mr. Gibson	X		

The motion unanimously passed.

I. EXECUTIVE SESSION

Before convening in closed session, members of the public will be provided the opportunity to comment on Executive Session agenda items.

There were no public comments. The Board took item I-1 out of order and convened in closed, Executive Session.

I-1 CONFERENCE WITH LEGAL COUNSEL—ANTICIPATED LITIGATION

Initiation of litigation pursuant to subdivision (c) of Government Code Section 54956.9:
1 potential case

Mr. Crow reported out of Closed Session that with regard to Agenda Item I-1 the Board gave staff direction regarding contacting the lessee of the Bluff Pointe Golf Course and entering into negotiations to potentially resolve outstanding legal issues.

G-2 Summary of Proposals and Recommendations of the Evaluation Panel Regarding Applications for the Multi-Benefit Water Quality, Water Supply, Ecosystem and Watershed Protection and Restoration Grants for the 2017-2018 Cycle

Staff recommendation: It is recommended the Board decline to fund the single grant proposal received the 2017-2018 application cycle, from River Partners to perform California Environmental Quality Act (CEQA) and other services for a possible habitat restoration project on the Conservancy's Ball Ranch and the Department of Fish and Wildlife's (CDFW) Willow Unit of the San Joaquin River Ecological Reserve, and direct staff to assist River Partners in refining the proposal for future Board consideration.

Ms. Raus presented a summary of Proposition 1 grants to date. In March 2016 Proposition 1 funds were awarded to River Partners for a habitat restoration opportunities analysis at Ball Ranch and the Willow Unit of the San Joaquin River Ecological Reserve managed by California Department of Fish and Wildlife (CDFW). In February 2017, River Partners completed a presentation to the Board providing their habitat enhancement recommendations. The Conservancy has received and accepted the report as complete. It will be provided to the Board at the May meeting. This cycle, the Conservancy received only one proposal, from River Partners, for habitat restoration on Ball Ranch and the Willow Unit. The work included CEQA review and permitting. The proposed restoration project would encompass state property under the jurisdiction of the Conservancy, CDFW, and possibly the State Lands Commission. The evaluation panel felt the proposed scope of work was not well defined and over budgeted. River Partners did not clearly present its proposed scope of work. The panel's scores were below 70, which are considered unacceptable scores. Staff and the evaluation panel recommend the Board decline to fund the grant and direct staff to work with CDFW and River Partners to develop a scope of work for CEQA compliance only and to present to the Board for a non-competitive grant in the future.

BOARD COMMENTS

Ms. Alvis noted that the Proposition 1 grants must be competitive. Ms. Marks suggested that since the Proposition 40 and 84 grants are non-competitive, River Partners would refine the application and the Conservancy could award the grant through a different program and different funding source. The other option is to deny the application and have River Partners reapply on the competitive program for Proposition 1.

Mr. Janzen asked if there was an option to release the 2018-19 request for proposals for the Proposition 1 money earlier than the last time and get some additional projects. Ms. Marks stated staff could try to release the Proposal Solicitation Package in June and have the Board consider proposals in September.

Mr. Frazier asked, since there was only one proposal, how could the Conservancy solicit more partners that can utilize these funds. Mr. Marks mentioned the Conservancy has been fairly comprehensive on the distribution list, but the area of the Conservancy's jurisdiction--the watershed authorized for Proposition 1 grants--is relatively small.

Mr. Gibson inquired whether there could be more projects to employ the Local Conservation Corps and California Conservation Corps, such as for weed abatement, breeches in ponds, more simple labor-intensive jobs.

Ms. Marks stated the Conservancy could consider kick-starting certain projects by getting CEQA planning and permitting done.

Mr. Hatler stated that habitat projects are expensive and complicated.

Mr. Frazier inquired about whether the bridge removal on Road 206 could be eligible for Proposition 1 grant funding. Ms. Marks stated there will be a staff report at the next Board meeting regarding the bridge.

On inquiry from Mr. Gibson about the balance of Proposition 1 funds, Ms. Raus replied there is approximately \$6 million.

Mr. Frazier suggested that River Partners can submit a proposal for a non-competitive grant.

Ms. Marks suggested the work focus on CEQA, and staff would assist them in rewriting the proposal and resubmitting for consideration.

PUBLIC COMMENTS

Mr. Tom Bohigian suggested the Board pursue getting rid of an invasive species at Ball Ranch, the Tree of Heaven, which has groves at the gate and towards the interior closer to the river.

Ms. Sharon Weaver, of the San Joaquin River Parkway and Conservation Trust, mentioned the challenges for a nonprofit in doing a project with a large magnitude. The agency must have the capacity to manage the project, and it would need to be relatively large and financially stable, since costs are advanced by the grantee and then reimbursed.

Mr. Gibson asked if the Conservancy could add staff to help facilitate projects. Ms. Marks answered that each budget cycle agencies can submit budget change proposals, but they are not approved unless there is a new mandate, program, or something driving the need.

Ms. Alvis informed the Board that bond measures typically allow for funding capital projects, with the administering agency having 5% for program delivery costs. It might be worthwhile to look at different examples other State agencies have used to provide technical assistance to help with the issue Ms. Weaver mentioned. It's an issue wherever the State is trying to provide funds to disadvantaged communities and organizations that do not have the capacity to do large scale projects.

Ms. Marks noted both the Conservancy's Associate Government Programs Analyst and the Program Manager position at the Wildlife Conservation Board are funded through the bond funds for program delivery.

Ms. Alvis suggested there might be opportunities for the agency to administer a grant for a smaller agency as a subcontractor to help manage cash flow issues.

Mr. Frazier expressed support for looking into opportunities to facilitate projects.

Mr. Gibson made a motion to take no action to fund the grant to River Partners and accept staff's recommendation to provide feedback to River Partners, allow them to reapply if we are able to provide a faster Proposition 1 application cycle, or allow them to apply for a noncompetitive grant. The Conservancy staff should keep the board informed on ways to make projects more attractive to other parties that might be willing to put these funds to good use in our area. The motion was seconded by Mr. Hatler.

ROLL CALL VOTE:

Name	Yes	No	Abstain
Mr. Frazier	X		
Mr. Oliver	X		
Mr. Brandau	X		
Ms. Auston	X		
Mr. Janzen	X		
Mr. Hatler	X		
Mr. Gresham	X		
Mr. Donnelly	X		
Ms. Alvis	X		
Ms. Lucchesi	X		
Ms. Finn	X		
Ms. Forhan	X		
Mr. Gibson	X		

The motion passed unanimously.

G-3 Create Ad Hoc Board Committee for Recruitment of Executive Officer, to Fill Position in Fall 2018

Staff recommendation: It is recommended the Board identify at least three and no more than five Board members to serve on an ad hoc committee to oversee the recruitment, evaluate candidates, and develop a recommendation to the full Board to fill the Executive Officer position upon retirement of the current Executive Officer in early fall 2018.

Ms. Marks recommended the Board nominate and make a motion to select three to five members to serve on the ad hoc committee to recruit and evaluate candidates for the Executive Officer position. She reported that there is a possibility to contract with a recruitment service without going out for bids, and that for her to continue serving in order to help with the transition, the Conservancy will need to apply to CalHR to secure approval to waive the waiting period for a retired annuitant.

Mr. Frazier stated the chairman and vice chairman would serve on the committee and requested a member from Fresno, Mr. Brandau; the State; and Ms. Forhan, the member with the most longevity of service on the Board.

Mr. Hatler nominated Ms. Alvis, who accepted.

Ms. Marks mentioned board member John Donnelly had indicated he was willing to serve on the committee. Mr. Donnelley, via teleconference, indicated his willingness to be on the committee.

Mr. Oliver asked if it would be possible to incorporate a process for getting feedback from the entire Board to create a candidate profile. Ms. Marks stated she would be able to include that in the contractor's scope of work.

PUBLIC COMMENT

Ms. Clary Creager stated there should be some open involvement from the community in choosing an executive officer; they would be able to provide useful input.

On motion made by Mr. Janzen, the members of the ad hoc committee would include: Brett Frazier, Steve Brandau, William Oliver, Bryn Forhan, John Donnelly, and Julie Alvis, with input from the remaining members of the Board. The motion was seconded by Ms. Auston.

ROLL CALL VOTE:

Name	Yes	No	Abstain
Mr. Frazier	X		
Mr. Oliver	X		
Mr. Brandau	X		
Ms. Auston	X		
Mr. Janzen	X		
Mr. Hatler	X		
Mr. Gresham	X		
Mr. Donnelly	X		
Ms. Alvis	X		
Ms. Lucchesi	X		
Ms. Finn	X		
Ms. Forhan	X		
Mr. Gibson	X		

The motion passed unanimously.

G-4 Report for Informational Purposes on Assembly Bill 3218, Authored by Assemblymember Dr. Joaquin Arambula

Staff recommendation: This item is presented for informational purposes only. No Board action is recommended.

Ms. Marks stated AB 3218 has been amended since the time of the staff report. The amendment primarily deals with the local agencies' concern that State Parks would use eminent domain to acquire lands for the Parkway. The most recent letters from individual Board

members to Assemblymember Arambula suggests language to ensure that the Conservancy would continue to act under its authority and powers to acquire lands and develop the Parkway, while State Parks would take on operations and management.

BOARD COMMENTS

Ms. Forhan stated this is the first opportunity that addresses the struggle to develop the Parkway and resolve the need for operations and maintenance. She hopes there is local support behind the bill as it is needed. She praised Assemblymember Arambula for his leadership in this matter.

Mr. Brandau stated he was a part of an ad hoc committee for operations and maintenance for projects and has always hit a wall--maybe this assembly bill is an opportunity that gets us past that wall. He has been meeting with other elected officials and had really good talks. A number of local electeds are concerned about local control issues, eminent domain, and other concerns about who the decision maker is regarding land use issues. Local control of land use and involvement in Parkway decision-making is important.

Mr. Oliver expressed his appreciation for Assemblymember Arambula going out of his way to engage and encourage talks and negotiations to refine the bill. He stated the issues regarding local control were heard loud and clear, and they are on right track. Board members also need to engage with the other representatives to find solutions.

Mr. Frazier stated he was present in the talks via teleconference and observed an engaged and an open line of communication. He stated this is an opportunity that we need to seize and move forward with. He has talked to both state and local officials and everyone seems open and committed to getting this accomplished. He thanks Assemblymember Arambula, represented in the audience by Ms. Ana Melendez, and the locals for their work on this. Mr. Frazier stated he is in support of the process.

Mr. Gibson asked if the local electeds will be at the hearing on April 24 representing the agencies and pushing the committee to move this forward.

Mr. Brandau stated that for him and several of the Board members, the language in the bill needs to provide assurances about local involvement in Parkway decision-making before they can provide full support.

Mr. Gibson asked Mr. Brandau if he and Mr. Borgeas are on the same page. Mr. Brandau stated they are, and the Fresno Mayor as well. If changes can be made they want to be in full support.

PUBLIC COMMENTS

Ms. Weaver, from the San Joaquin River Parkway and Conservation Trust echoed the appreciation for Assemblymember Arambula and his leadership. Ms. Weaver noted that in May of 1988, then-Assemblymember Costa came to speak at a meeting in support of State Parks' operation of the Parkway. In about 2000, there were state legislative hearings trying to move the idea forward; however, due to budget constraints, the proposal was not funded.

No action was recommended or taken.

H. ADMINISTRATIVE AND COMMITTEE REPORTS

H-1 Organizations

If time allows, the following oral reports will be provided for informational purposes only, and may be accompanied by written reports in the Board packet. No action of the Board is recommended.

H-1a San Joaquin River Parkway and Conservation Trust

Sarah Parkes stated the Trust just finished a Parkway Ambassadors Program visiting various sites. The Parkway Trust will be celebrating its 30th anniversary year and the Parkway Trust will be hosting a special walking cocktail party called Sunset at Spano on Thursday, April 26th.

H-1b RiverTree Volunteers

No report.

H-2 Deputy Attorney General

No report.

H-3 Executive Officer

H-3a River West Fresno, Eaton Trail Extension Work Group, Summary of Activities, February and March 2018

Staff recommendation: This report is for informational purposes. No Board action is recommended.

Ms. Marks updated the board on the progress of the North Palm access. The San Joaquin River Access Corporation is working on securing a consultant for the post-closure land use plan. The consultant will prepare and submit the report to the two regulatory agencies. The agencies will need final design documents before they sign off on a final post closure land use plan, such as grading plans. The Access Corporation has also been renegotiating the proposed Spano easement. The easement is required in order for them to exercise their purchase option; as soon as staff can see the revised easement, the land agent at the Wildlife Conservation Board will review the easement's effects on the potential for State fee title ownership of the property. If the State does not wish to acquire the property, then the land agent will provide guidance on the type of permanent access easement that would be required. Both issues are the critical to make it possible to implement the North Palm access. Also, members of the work group are trying to develop the operations and maintenance costs at least at the budgeting level for the core project elements. If we can identify a resource for the operations and maintenance costs, the Board could authorize the design and permitting to begin to build those first components.

No action was recommended or taken.

H-4 Board Members' Reports

Mr. Janzen informed the Board that Friant Dam may fill if the warm weather and rains continue; releases would be uncontrolled if that occurs.

Mr. Gibson thanked the Conservancy staff for their hard work on the Master Plan Update. Ms. Marks expressed her appreciation for Ms. Morkner-Brown for her work on the FEIR and Resolution documents, which have to be very precise, and her appreciation for Ms. Heidi West who was invaluable in expertly reviewing the many drafts of the Draft EIR and appendices.

Mr. Frazier stated in regards to agenda item G4, the Board should all be proud that its work has elevated the Parkway operations issues, so that it now has the attention of our representatives in the legislature.

J. NOTICE OF BOARD, ADVISORY, AND PUBLIC MEETINGS

None.

K. NEXT BOARD MEETING DATE


The next Board meeting will be held May 2, 2018. **Please note the earlier starting time of 10:00 a.m. for meetings in February through October.**

L. ADJOURN

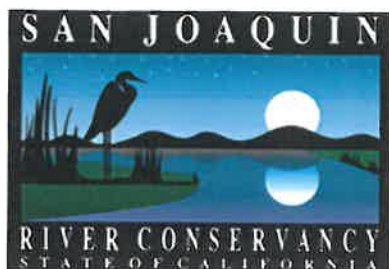
Chairman Frazier adjourned the meeting at approximately 12:47 p.m..

Board meeting notices, agendas, and approved minutes are posted on the Conservancy's website, www.sjrc.ca.gov. For further information or if you need reasonable accommodation due to a disability, please contact Jasanjit Bains at (559) 253-7324 or Jasanjit.Bains@sjrc.ca.gov.

Respectfully Submitted,



Melinda S. Marks, Executive Officer



SAN JOAQUIN RIVER CONSERVANCY

Agenda Item

Item F-1

May 2, 2018

TO: San Joaquin River Conservancy
Governing Board

FROM: Melinda S. Marks, Executive Officer

SUBJECT: **Distribution of Habitat Restoration Opportunities Analysis for the San Joaquin River Parkway, Ball Ranch and Willow Unit, Prepared by River Partners (February 2017)**

RECOMMENDATION:

This report is for informational purposes. No Board action is recommended.

SUMMARY:

In March 2016, the Conservancy Board awarded a Proposition 1 grant to River Partners to implement the Ball Ranch Habitat Restoration Planning Project. In February 2017, River Partners made a presentation to the Board on the preliminary conclusions and habitat enhancement recommendations for the project. River Partners finalized the Habitat Restoration Opportunities Analysis for the San Joaquin River Parkway: Ball Ranch and Willow Unit and provided it to the Conservancy, Wildlife Conservation Board and the Department of Fish and Wildlife to complete their grant project. The final report is attached for the Board's information.

The attached Restoration Opportunities Analysis is an ecological assessment and restoration plan that will serve as a guide for future restoration projects on Ball Ranch and on the Department of Fish and Wildlife's Willow Unit of the San Joaquin River Ecological Reserve. River Partners did an in-depth analysis of land use history, including soil types, depth to the water table, topography, and hydrology, that will affect potential restoration projects.

River Partners analyzed the following environmental indicators:

- Soil types: Identified soil types across the project area.
- Habitat Suitability: Existing habitat was analyzed to determine whether it meets the requirements to support target wildlife species.
- Vegetation: Existing native and non-native plants were inventoried to allow for a plan that addresses what invasive species mitigation strategies may be necessary.
- Assessment of planting considerations including availability of irrigation water, necessary pesticide application permits, availability of local planting stock, and plant propagation strategies.


- Topography: Analyzed the landform through topography, images, and site visits.
- In addition to these environmental indicators, River Partners assessed historical factors including flooding and land use.

DISCUSSION:

The grant to River Partners was awarded during the Conservancy's first cycle of the Multi-Benefit Water Quality, Water Supply, Ecosystem and Watershed Protection and Restoration competitive grant program. The program is funded by a \$10 million allocation to the Conservancy from the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1).

The Conservancy's Ball Ranch contains mixed riparian forest, valley oak riparian forest, valley oak woodland, willow scrub, non-native grasslands, freshwater marsh, and artificial open water ponds. It has significant wildlife values, including a resident deer population and a wide array of bird species. However, the site's natural resource values have been degraded by past gravel mining and invasive species. The property provides the opportunity for habitat restoration investment, that would provide multiple benefits to both the ecosystem and local community.

River Partners is a well-established nonprofit conservation organization with expertise in restoring Central Valley wetland, riparian, aquatic, and woodland habitats. They often provide consultation and guidance to other organizations and are active members of the San Joaquin River Partnership. River Partners' expertise is of great benefit in assessing this high-priority Parkway restoration opportunity.


Rebecca Raus
Associate Governmental Program Analyst

Attachment

Habitat Restoration Opportunities Analysis for the San Joaquin River Parkway, Ball Ranch and Willow Unit

Fresno County, California



Prepared for:



San Joaquin River Conservancy



California Department of Fish and Wildlife



California Wildlife Conservation Board



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- Appendix A** Irrigation Water Analysis Ball Ranch and the Willow Unit
Appendix B Vegetation Species List found at Ball Ranch and the Willow Unit

Suggested citation:

River Partners. 2016. Habitat Restoration Opportunities Analysis for the San Joaquin River Parkway, Ball Ranch and Willow Unit. Turlock, California.

Acknowledgements

The following individuals contributed to this opportunities analysis:

Name	Affiliation
Heyo Tjarks	River Partners
Jeff Holt	River Partners
Michael Rogner	River Partners
Kathleen Pollett	River Partners
Stephen Sheppard	River Partners
Frank Reynoso	River Partners
Melinda Marks	San Joaquin River Conservancy
John Battistoni	California Department of Fish and Wildlife

EXECUTIVE SUMMARY

The Habitat Restoration Opportunities Analysis (Analysis) for the San Joaquin River Parkway, Ball Ranch and Willow Unit (Project area) evaluates the habitat restoration potential and provides specific recommendations for 515 acres of Ball Ranch and the Willow Unit within the San Joaquin River Parkway. Ball Ranch and the Willow Unit are two contiguous State of California-owned properties located along the southern bank of the San Joaquin River approximately five miles downstream from Friant Dam (Figure 1). Ball Ranch is managed under the jurisdiction of the San Joaquin River Conservancy (SJRC) as a part of the San Joaquin River Parkway, while the Willow Unit is managed under the jurisdiction of the California Department of Fish and Wildlife (CDFW) as part of the 958-acre San Joaquin River Ecological Reserve.

The primary goals of this Analysis are to protect and restore riparian and adjacent upland habitat, as well as habitat connectivity that will have multi-species benefits and will serve as an important wildlife corridor, reduce impacts of climate change on the local ecosystem, while also maintaining planned recreation opportunities for the local community. Target wildlife species for the Project include Federal- and State-listed endangered species such as the California tiger salamander (*Ambystoma californiense*), least Bell's vireo (*Vireo bellii pusillus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Swainson's hawk (*Buteo swainsoni*), bald eagle (*Haliaeetus leucocephalus*), and Chinook salmon (*Oncorhynchus tshawytscha*). Additionally, the Project will target habitat for CDFW Species of Special concern including western spadefoot (*Spea hammondi*), western pond turtle (*Emys marmorata*), and spotted bat (*Euderma maculatum*), as well as neotropical migrant songbirds, year-round resident and wintering water birds, waterfowl, raptors and deer.

A site evaluation examined soils, depth to the water table, native and invasive plant populations and distribution, hydrology, and past land use and current conditions. Based upon the site evaluation, the Analysis identifies opportunities to plant and establish three plant associations and a native herbaceous layer in the Project area for the purposes of habitat restoration. The Plan identifies two additional restoration opportunities to improve the function of existing wetland and floodplain habitat. It also outlines implementation strategies and necessary permits. This plan serves as a framework to produce site-specific planting plans and identifies the required permitting, potential irrigation water sources, plant source material, restoration actions, and general timelines. This plan is intended to be a tool for future decisions and actions by individual agencies.

HABITAT RESTORATION OPPORTUNITIES ANALYSIS FOR THE SAN JOAQUIN RIVER PARKWAY, BALL RANCH AND WILLOW UNIT FRESNO COUNTY, CALIFORNIA

I. INTRODUCTION

A. Project Overview

The Habitat Restoration Opportunities Analysis (Analysis) for the San Joaquin River Parkway, Ball Ranch and Willow Unit (Project area) describes scientifically based ecological design and implementation activities for restoring and enhancing approximately 515 acres of riparian, wetland, and upland habitat along the San Joaquin River in Fresno County (Figure 1). The primary goal of this Analysis is to increase and improve riparian, upland and wetland habitat that will provide multi-species benefits, reduce impacts of climate change on the local ecosystem, and support potential low-impact recreational activity on the Project area. Wildlife targets include Federal- and State-listed species such as the California tiger salamander (*Ambystoma californiense*), least Bell's vireo (*Vireo bellii pusillus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Swainson's hawk (*Buteo swainsoni*), bald eagle (*Haliaeetus leucocephalus*), and Chinook salmon (*Oncorhynchus tshawytscha*). Additionally, the Project will target habitat for CDFW Species of Special concern including western spadefoot (*Spea hammondi*), western pond turtle (*Emys marmorata*), and spotted bat (*Euderma maculatum*), as well as neotropical migrant songbirds, year-round resident and wintering water birds, waterfowl, raptors and deer. The Analysis is designed to be consistent with the potential future development of a trail system and public river access within the Project area. Habitat restored through the implementation of this Analysis will improve future wildlife observation and environmental interpretation opportunities, and provide shade for the potential trail system.

Approximately 6% of the historic riparian forest community remains in the San Joaquin Valley (CALFED 1999). The San Joaquin River and its tributaries are all anthropogenically distressed ecosystems in which natural processes can no longer maintain extant riparian communities. Water diversion, flow regulation, floodplain leveling and clearing, sand and gravel mining, and invasive species function as major stressors on native plant and wildlife communities. Cumulative effects of these stressors are manifested in the numerous special status species currently under Federal or State protection that can only be found in these riparian ecosystems. The width of the riparian corridor adjacent to the San Joaquin River is greatly reduced or absent compared to historical levels, reducing the amount of quality riparian and upland habitat (forage and cover) available for riparian-obligate species. Most of the dense, remnant riparian forest at the Project area is found along the multiple waterways, typically as narrow bands (<200 feet wide). The majority of the Project area is covered in non-native annual grasses which reduces habitat value for wildlife and increases fire severity (Reiner 2007).

In addition, the upland habitat along the river has been leveled for agricultural production and cattle grazing, and has undergone intensive sand and gravel mining, which do not provide the necessary vegetative cover to serve as riparian corridors.

Without active restoration, riparian habitat will be limited to narrow bands lining the waterways, and the native oak woodlands will slowly disappear because natural recruitment is nearly non-existent due to grazing (90 acres are currently leased for grazing by the SJRC) and the competition of non-native annual grasses. The efforts proposed in the Analysis will restore and enhance approximately 516 acres of riparian, wetland, and upland habitat within this highly degraded region.

B. Cooperative Relationships and Funding Sources

Funding for the Project has been granted by the San Joaquin River Conservancy (SJRC) through the California Wildlife Conservation Board (WCB); specifically the Water Quality, Supply and Infrastructure Improvement Act of 2014, Section 79731(g). The San Joaquin River Conservancy (Ball Ranch) and the California Department of Fish and Wildlife (Willow Unit) are the state agencies responsible for managing the two properties involved in the Analysis. Project assistance through local input came from the San Joaquin River Parkway and Conservation Trust. The Analysis is consistent with the common goals of the following landscape and regional conservation plans:

- Central Valley Joint Venture 2006 Implementation Plan
- Riparian Habitat Joint Venture Riparian Bird Conservation Plan (2004)
- California Partners In Flight Oak Woodland Bird Conservation Plan (2002)
- Fresno County General Plan (2000)
- Restoration Objectives for the San Joaquin River Restoration Program
- San Joaquin River Parkway Master Plan (1997)
- Conceptual Ball Ranch Master Development Plan (2006)
- California Water Action Plan 2016 Update

C. Project Goals and Objectives

This document presents a restoration opportunity analysis for approximately 515 acres along the San Joaquin River at Ball Ranch and the Willow Unit, that once implemented would meet the following objectives:

- Promote the goals, objectives, and policies identified in the San Joaquin River Parkway Master Plan;
- Restore or improve high quality riparian, upland, and wetland habitat on approximately 378 acres on Ball Ranch and 137 acres on the Willow Unit;
- Increase habitat connectivity within the Project area relative to existing riparian habitat;
- Provide habitat for Federal- and State-listed species including the least Bell's vireo, western yellow-billed cuckoo, California tiger salamander, Swainson's hawk, bald eagle, and support the efforts to reintroduce spring run Central Valley spring-run Chinook salmon;
- Provide habitat for other riparian-obligate wildlife;
- Increase the area of frequently inundated floodplains for the benefit of juvenile Chinook salmon;
- Reduce extent of existing invasive weeds, and increase community resistance to weed invasion by planting a dense herbaceous understory;

- Increase landscape aesthetics and support potential planned recreational uses; and
- Build partnerships with Federal, State, and local entities.

D. Summary of Special Considerations

The recommendations take into account the following considerations:

- Creating functional wildlife habitat, while maintaining the future utility of a public recreation space;
- Establishing quality habitat on variable topography;
- Avoiding or minimizing potential impacts to threatened and endangered species on site;
- Considering the possible concerns of multiple stakeholders;
- Deterring herbivory by cows, rodents, and deer until establishment of the restoration;
- Aggressively controlling sesbania (*Sesbania punicea*), yellow starthistle (*Centaurea solstitialis*), tree of heaven (*Ailanthus altissima*), eucalyptus (*Eucalyptus camaldulensis*), tamarisk (*Tamarisk ssp.*) and other invasive species to reduce infestations and stop them from spreading;
- Designing a climate-smart restoration which considers potential climate change impacts and incorporates ecological redundancies robust enough to ensure against uncertain future conditions.

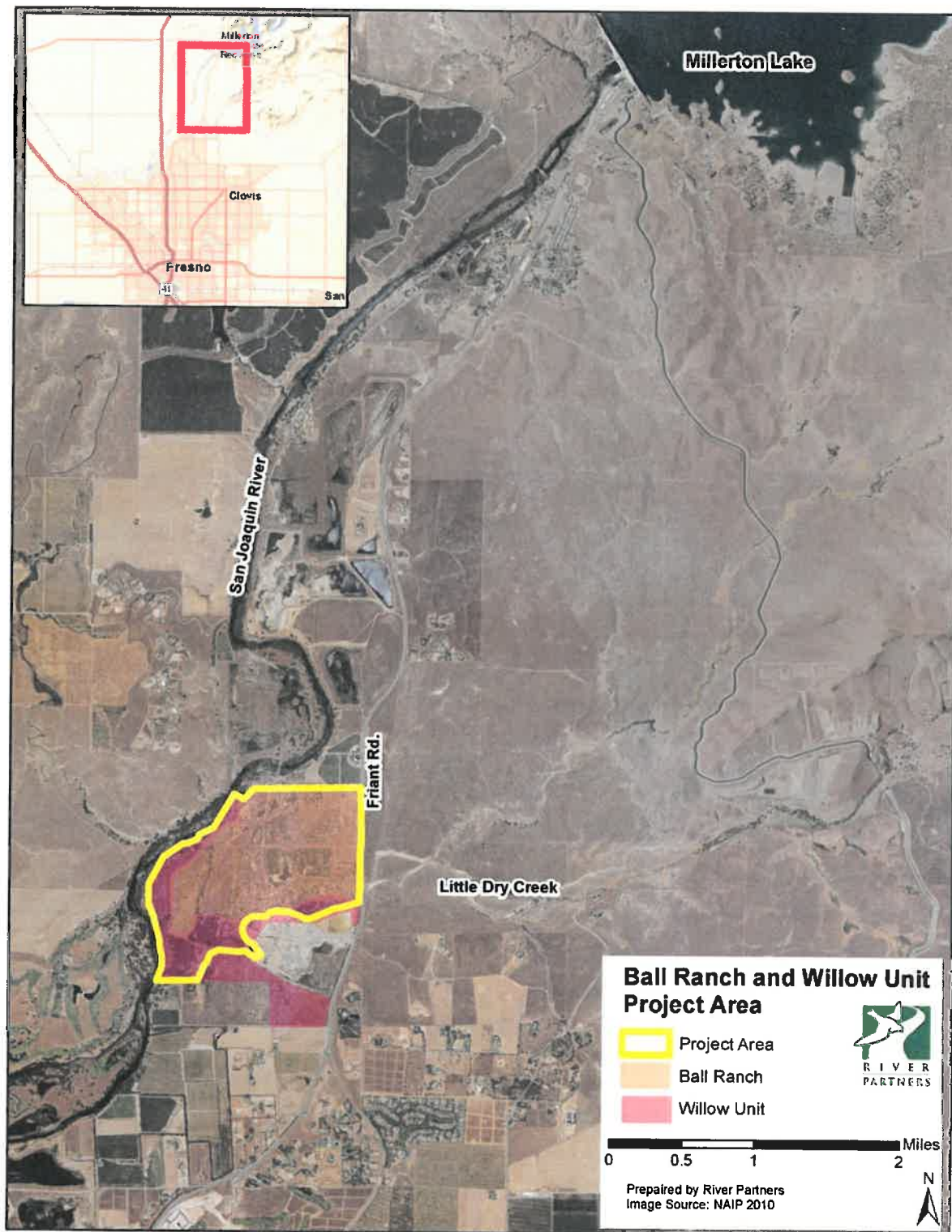


Figure 1. Project Location: Ball Ranch and the Willow Unit, Fresno County, California.

E. Purpose of the Habitat Restoration Opportunities Analysis

The purpose of the Plan is to:

- Identify project goals and objectives;
- Summarize the site land-use history, soils, hydrology, vegetation, and wildlife;
- Outline the current understanding of the physical and biological factors that influence site ecology (i.e., a conceptual site model);
- Describe the planting design and the rationale for its selection;
- Describe the implementation process including field preparation, planting methods, irrigation design and schedule, and methods of weed control;
- Identify required permits; and
- Outline general project timelines.

II. SITE DESCRIPTION

A. Location

The Project area is composed of two adjacent State-owned properties along the San Joaquin River approximately five miles downstream from Friant Dam in Fresno County, California (Figure 1). Ball Ranch is 378 acres and is situated between Friant Road to the east and the Willow Unit to the west with private property to the north and a gravel mining operation to the south. The Willow Unit is 225 acres and abuts the San Joaquin River on the west, private property on the south, and Ball Ranch and the gravel mining operation on the northeast. The Project area only includes 137 acres of the Willow Unit which consists of the land west of the gravel mine and north of Little Dry Creek on the northern portion.

Along this stretch of the San Joaquin River, the floodplain is approximately 1.5 miles wide before being confined by the higher-elevation river bluffs and hillsides. Both Ball Ranch and the Willow Unit are primarily surrounded by agriculture including permanent and non-permanent crops as well as cattle grazing. Additionally, an active gravel mine abuts the southeastern corner of the Project area.

B. Land-use History

By the early 1900's most of the Project area was used for agricultural production, grazing, dairy operations, as well as sand and gravel mining (Figure 2). By 1940, the dairy operation was stopped and mining activities increased while agricultural and grazing activities decreased (URS 2005). These mining activities have created several borrow pits which intercept and are maintained by local ground water and precipitation, and, in the case of the largest pond, overflow of Little Dry Creek, creating wetlands and perennial ponds. Prior to the purchase of the parcels which make up Ball Ranch and the Willow Unit, a worm farm was established in the northwest corner of the property adjacent to the river. It consists of five detention basins approximately 4-5 feet deep. The basins are interconnected with water checks and drainage pipes which discharge directly to the river, similar to how rice fields are constructed. The excavated pits and drainage culverts remain today (Figure 3).

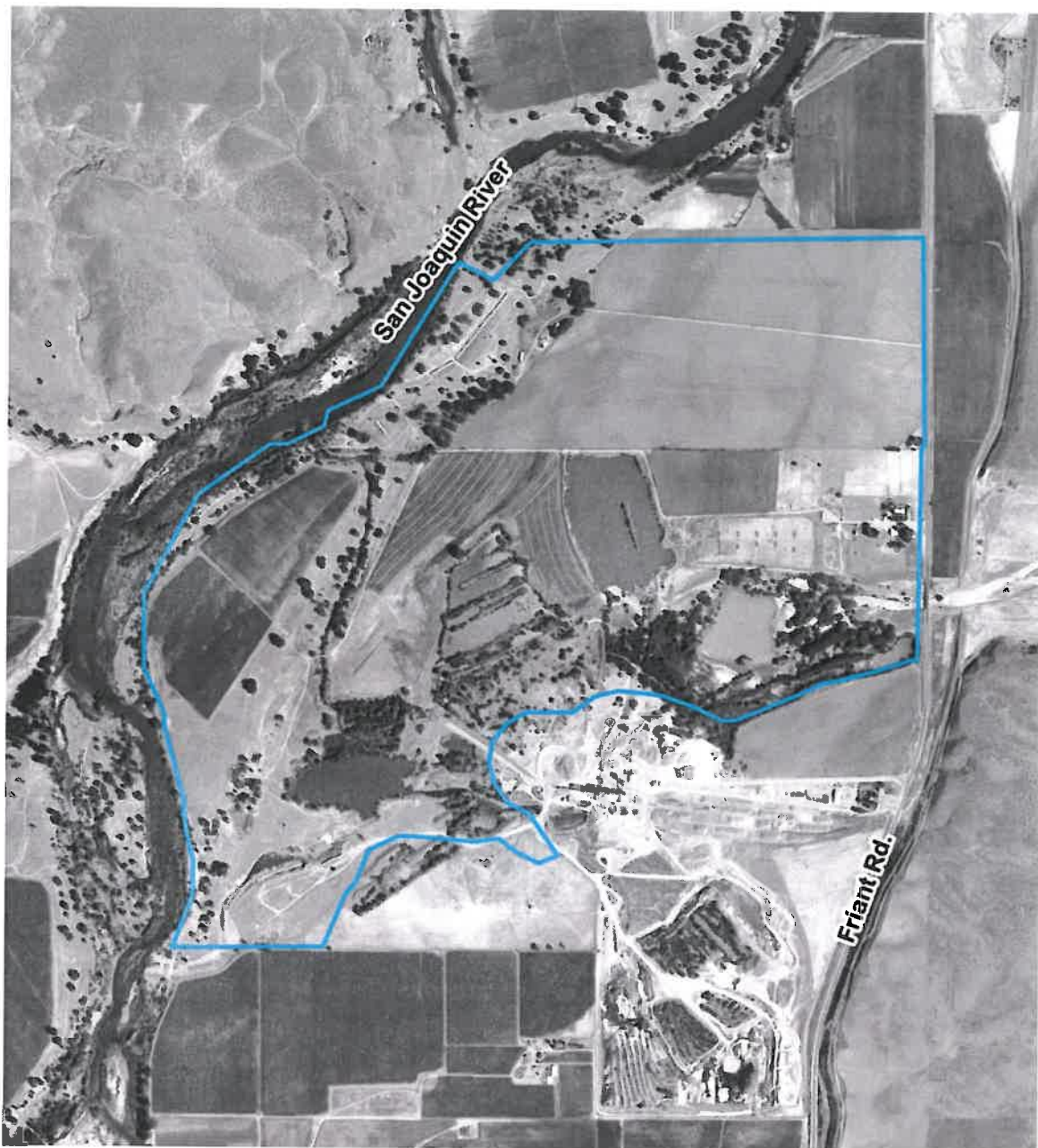


Figure 2. 1962 Aerial photograph of Ball Ranch and the Willow Unit, Fresno County, California.

Since the acquisition of Ball Ranch, the property has been managed by the SJRC. Public access has been limited to supervised stewardship, recreation, and educational activities, with the exception of a few weekends in which open access to the public was allowed for fishing the ponds. The SJRC leases 90 acres for cattle grazing to provide a management presence on the site. Since the acquisition of the Willow Unit, CDFW has managed the property as part of their San Joaquin River Ecological Reserve. Because

the Reserve is managed for the benefit of wildlife, public access has been limited to permitted entry only.



Figure 3. Area of Former Worm Farm at Ball Ranch and the Willow Unit, Fresno County, California.

C. Topography

The Project area is a floodplain terrace with a gradual increase in elevation ranging from 290 feet along the river's edge to 315 along Friant Rd (Figure 4). Human activity has greatly altered the topography of the Project area. As evident from historic photos, gravel pit mining from the early 1900's through the 1970's created depressions and borrow pits which are now wetlands and permanent ponds. A channel was also cut in order to pump river water into a holding pond used for mining activities. In addition, five detention basins were also created for a worm farm in the northwestern portion of the Willow Unit. The remainder of the Project area is comprised of two relatively flat terraces, having been historically leveled and disked for agricultural purposes. The lowest floodplain terrace parallels the San Joaquin River and Little Dry Creek, while the upper terrace makes up the northeast corner of the project area including the majority of the old gravel mining pits.

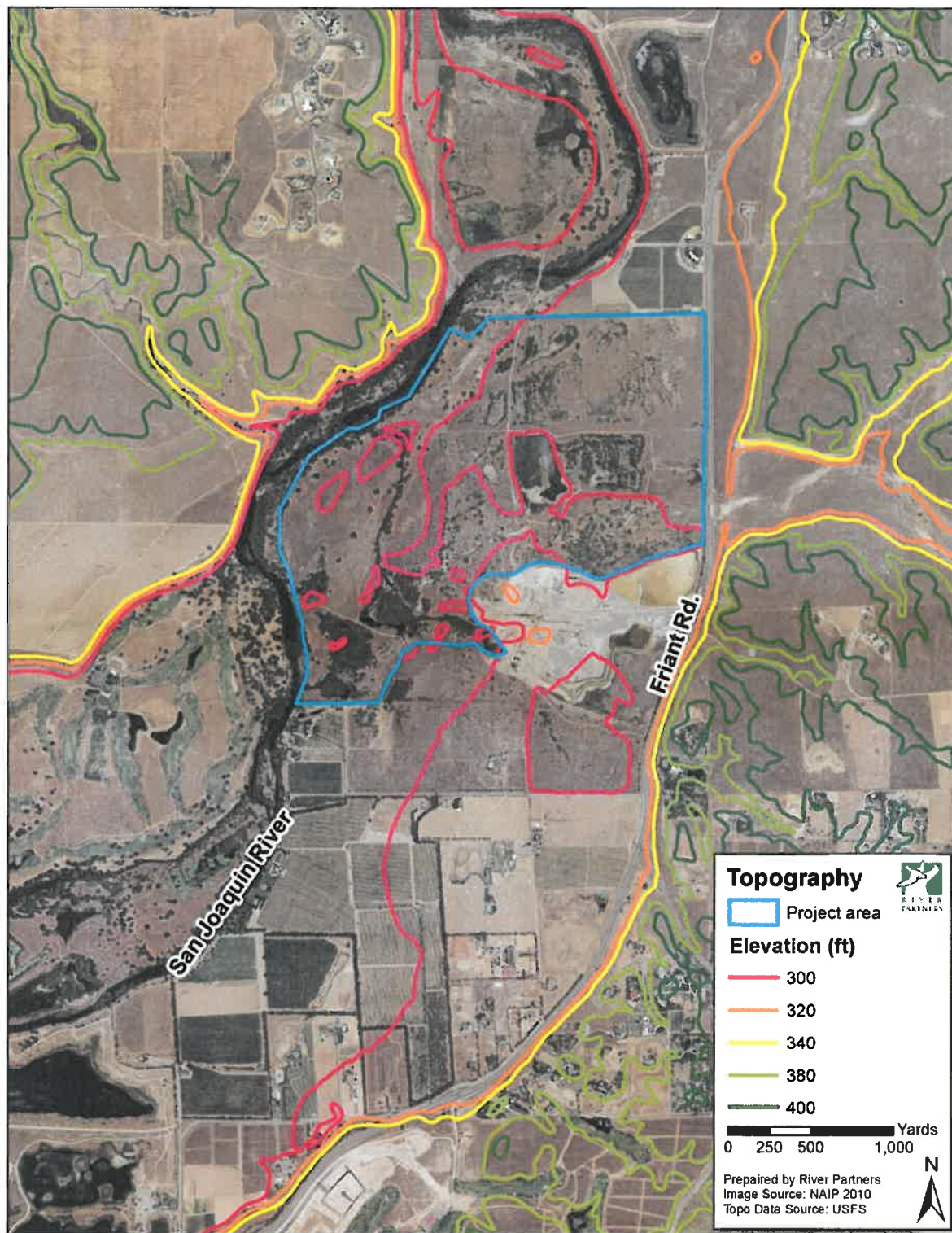


Figure 4. Topography: Ball Ranch and the Willow Unit, Fresno County, California.

D. Soils

Dynamic river processes created heterogeneous floodplain soils that vary in texture, structure, and stratification. These variable soil characteristics greatly affect riparian vegetation composition, structure, and patterns. Soils on the Project area are a mosaic of sandy loam alluvial soil types derived primarily from granite, characteristic of alluvial floodplains.

1. General Soil Series Information

The Project area includes twelve soil mapping units (SMUs) as delineated by the Natural Resources Conservation Service Web Soil Survey (2015). Soils from the Grangeville, Hanford and Tujunga series make up the majority of the Project area. The Grangeville, Hanford, and Tujunga series are common soils in floodplains and alluvial fans in the eastern San Joaquin Valley. Both of these soil series include soils that are classified as “prime farm land” which makes them excellent soils for plant growth (Figure 5, Table 1). In general, they are 6 feet or more deep and are underlain by gravel and cobble lenses.

2. Soil Pit Information

No soil pits were dug on-site due to the sensitivity and potential occurrence of the federally threatened California tiger salamander which resides underground in burrows for the majority of its life cycle. However, limited data was collected as part of a ground water analysis that was conducted in 2012 (Escobar). As part of the analysis, 10 monitoring wells were drilled across the site. During the drilling, Escobar noted a dense cobble layer ranging between 6-10 feet below ground surface level at most of the well locations, although this layer was not precisely measured during the well installations. However, this information is consistent with the NRCS soils data. The cobble lens can also be seen on the steep slopes of the ponds, as they are old gravel pits with the steeper sides maintaining the site's soil stratification (Figure 6).

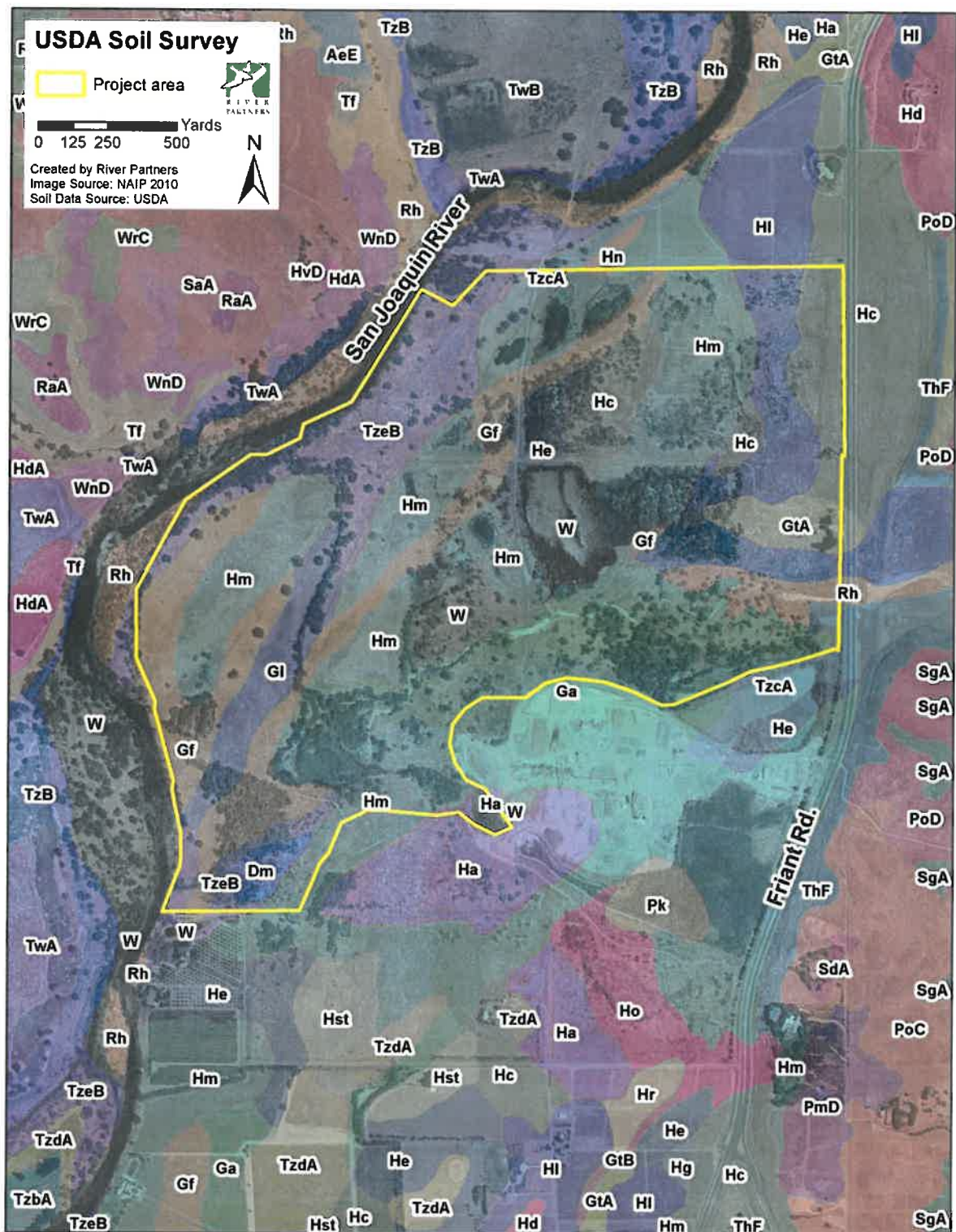


Table 1. Summary of Typical Soil Conditions Found at Ball Ranch and the Willow Unit (NRCS 2015), Fresno County, California.

	Dello loamy sand	Grangeville sandy loam	Grangeville fine sandy loam 0-1% slopes	Grangeville fine sandy loam, gravelly substratum	Greenfield sandy loam	Hanford sandy loam	Hanford sandy loam, gravelly substratum	Hanford gravelly sandy loam	Hanford fine sandy loam	Riverwash	Tujunga loamy sand, gravelly substratum	Tujunga soils, channeled
Mapping unit	Dm	Ga	Gf	GI	GIA	Hc	He	Hi	Hm	Rh	TzcA	TzeB
% Slope	0-2%	0-2%	0-1%	0-2%	0-3%	0-2%	0-2%	0-2%	0-2%	0-2%	0-3%	0-9%
Texture	Loamy sand	Sandy loam	Fine sandy loam	Fine sandy loam	Sandy loam	Sandy loam	Sandy loam	Gravelly sandy loam	Fine sandy loam	Coarse sand	Loamy sand	Gravelly sand
Depth to restrictive layer	80+ inches	80+ inches	80+ inches	80+ inches	80+ inches	80+ inches	80+ inches	80+ inches	80+ inches	Date not available	80+ inches	80+ inches
Drainage	Somewhat poor	Somewhat poor	Somewhat poor	Somewhat poor	Well drained	Well drained	Well drained	Well drained	Well drained	Excessively drained	Somewhat excessively drained	Somewhat excessively drained
Permeability	High to very high 5.95-19.98 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High 1.98-5.95 in/hr	High to very high 5.95-19.98 in/hr	High to very high 5.95-19.98 in/hr	High to very high 5.95-19.98 in/hr
Available water capacity	Low 4.1 inches	Moderate 8.3 inches	High 9.2 inches	Low 5.9 inches	Moderate 8.0 inches	Moderate 7.8 inches	Moderate 7.1 inches	Low 6.0 inches	Moderate 7.8 inches	Very low 2.9 inches	Low 5.2 inches	Low 3.6 inches
Limitations to plant growth	Low water capacity	None	None	Low water capacity	None	None	None	Low water capacity	None	Low water capacity, low organic material	Low water capacity	Low water capacity, low organic material



Figure 6. Visible Cobble Lens in the Soil Surrounding the Main Pond at Ball Ranch, Fresno County, California.

E. Hydrology

1. History and Current Conditions

The San Joaquin River is the second largest river in the Central Valley with an annual average flow of 4.5 million ac-ft. It originates as two upper forks on the south-central slope of the Sierra Nevada range. Historically, its flows have peaked in spring and early summer with snowmelt runoff from the Sierra Nevada Mountains.

The main stem and tributaries of the San Joaquin River are now extensively dammed and diverted. The river is typically divided into two sections with the upper reaches above Friant Dam and the lower section on the valley floor. Four hydroelectric dams exist on the upper reaches of the river. Below the confluence of its forks stands the most significant barrier on the main stem San Joaquin River, Friant Dam. Construction of Friant Dam was begun in 1937 and completed in 1942 under the direction of the U.S. Bureau of Reclamation (BOR). Because of a work stoppage in the wake of WWII, the downstream water conveyance systems were not completed. Construction of the associated diversion tunnels and canals was completed in 1944, which initiated the

filling of the reservoir. Downstream from Friant Dam are numerous structures designed to move water into canal systems in addition to the hundreds of pumping points for irrigation water. With the construction of the Eastside Bypass and other diversions, the dry riverbed below Gravelly Ford downstream of the Project site had little chance of receiving any measurable flows, typically only receiving water in flood stage events.

In 2006, after 18 years of litigation, a settlement was reached to provide suitable fish habitat in the San Joaquin River below Friant Dam and to support a healthy self-sustaining salmon population downstream to the mouth of the Merced River. Interim flows began in October 2009 to allow data collection in sections of the historic riverbed that had remained dry for decades. Restoration flows were released beginning in January 2014, however restoration flows ceased in February 2014 due to a critical low water year. Restoration flows were again released throughout 2016.

Friant Dam was constructed for the main purpose of providing water for agriculture, with flood control considered only a secondary benefit on the lower San Joaquin River. River flows since the dam's construction are more consistent with a flatter hydrograph. Daily mean flows regularly approached or exceeded 1,000 cfs before the construction of Friant Dam, but now only sporadically exceed that mark in the post-dam period. US Geological Survey river data at Friant (river gage #11251000) for the pre-dam period of record 1907-1944 show greater variation in daily stream flows compared to the post-dam period 1945-present (Figure 7).

River data pre-1944 show a typically high range of annual peak stream flows (Figure 8**Error! Reference source not found.**; min=3,380 cfs, max=77,200 cfs, range=73,820 cfs). After the construction of Friant Dam, the range of stream flow variation below the dam narrowed considerably. The lowest annual peak flow in the post-dam period has been 161 cfs in 1966 and the maximum peak flow was 60,300 cfs in 1997 (which was an uncontrolled release due to overtopping of the dam caused by unexpected volumes of inflow resultant from a rare warm winter storm). For comparison, the largest pre-dam flood event on record peaked at 77,200 cfs on December 11, 1937. In the 35 year period on record before the dam was completed, there were 25 peak events greater than 10,000 cfs, while in the 71 year post-dam period, only six events occurred of a magnitude greater than 10,000 cfs.

A comparison of the two peak flow years on record for the San Joaquin River, pre-and post-Friant Dam, reveal two very different flood years. The annual hydrograph for water year 1937 shows winter and spring flows of much higher magnitude, variation, and longer duration (Figure 9) than the floods of 1997 (Figure 10**Error! Reference source not found.**), the largest on record since this dam was constructed. Since the construction of Friant Dam, water availability has been lower than initially anticipated by the U.S. Bureau of Reclamation, especially during the drought period of 1987-1992. This generated further controversy with agricultural water users downstream, over water quality and quantity for irrigation (BOR 2008).

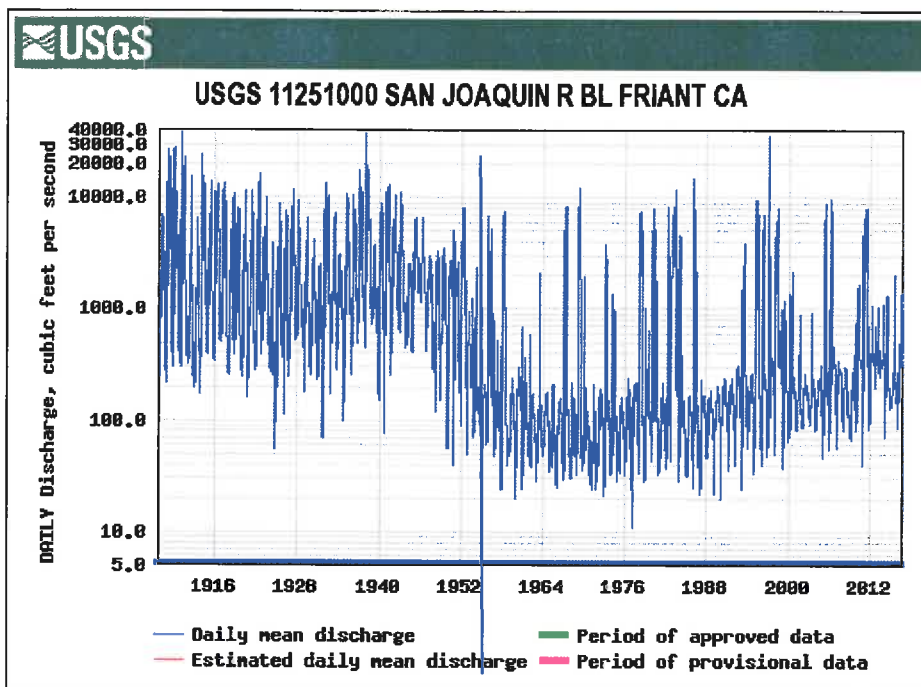


Figure 7. San Joaquin River Stream Flow Below Friant Dam for the Period of Record 1907-2015. Vertical Red Line Indicates 1944, the Year Millerton Lake Began to Fill.

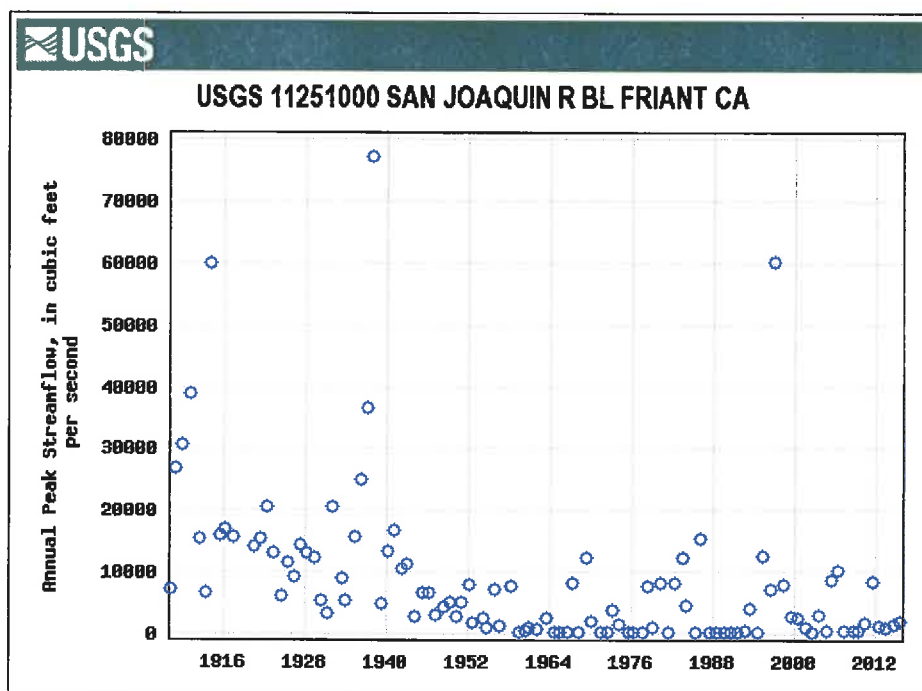


Figure 8. San Joaquin River Annual Peak Stream Flows Below Friant Dam for Period of Record 1907-2015 at Gage #11251000

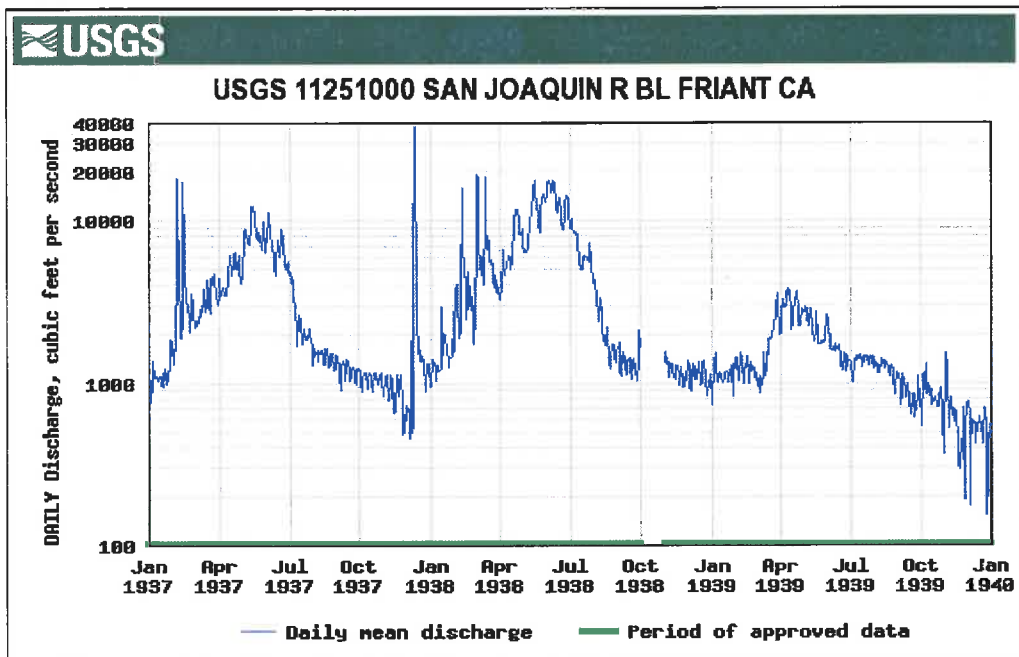


Figure 9. Hydrograph for water years 1937-1939, showing the largest winter flood event prior to the construction of Friant Dam.

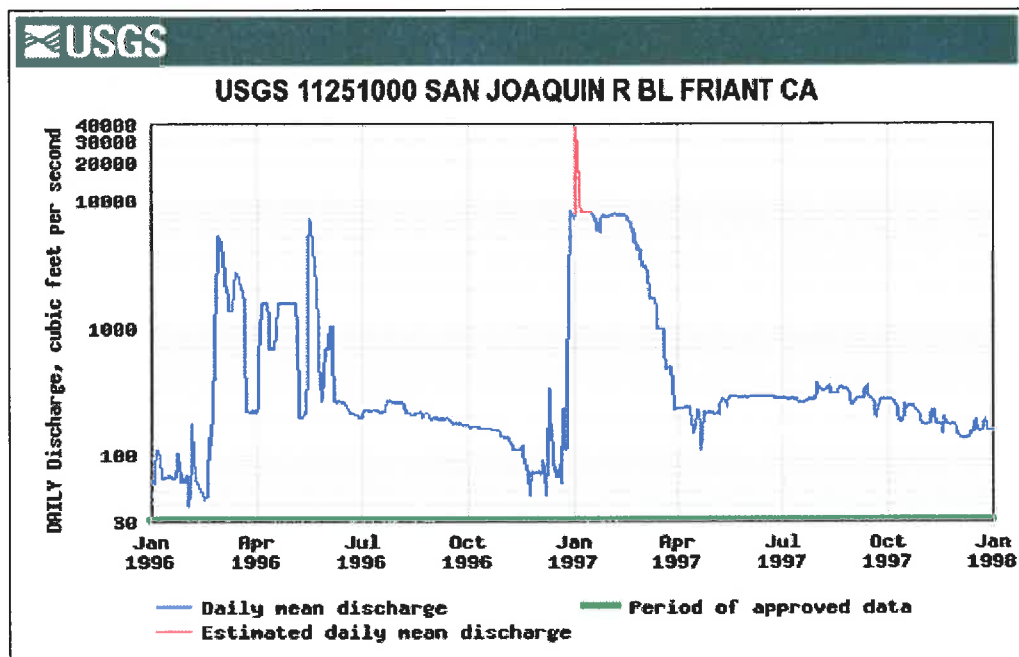


Figure 10. Hydrograph for Water Years 1996 - 1997, San Joaquin River Below Friant Dam, the Largest Flood Event on Record Post Dam Construction.

In its current regulated state, the San Joaquin River rarely exceeds its banks at the project area, maintaining the river in its current channel, with little opportunity for lateral migration. In this static condition, native riparian trees, especially those species adapted to a natural hydrograph (i.e. willows and cottonwoods), will rarely naturally recruit at this site. These species evolved to recruit and establish depending upon dynamic flow events at times coincident with seed-set and active scouring that would prepare mineral seedbeds for germination.

In addition to the San Joaquin River, the Project area contains a portion of Little Dry Creek, a water intake canal for the neighboring gravel mining operation, perennial ponds, and several wetlands. Figure 11 displays all nationally mapped wetlands according to the US Fish and Wildlife Service's (USFWS) National Wetlands Inventory. Little Dry Creek flows south-westerly across the southern portion of the Project area. It is an ephemeral stream which only flows during and immediately after significant precipitation events (Figure 12). It is also occasionally used to convey flood water through low level releases (up to 700 cfs) from the Big Dry Creek Reservoir to the San Joaquin River (MWH 2003). The Big Dry Creek reservoir is designed to provide flood protection to the Fresno-Clovis Area. Controlled releases are made through low-level release structures while uncontrolled releases are made through an ungated, 500-foot wide concrete ogee spillway which directs flood flows into the Little Dry Creek Diversion Channel. This diversion channel flows from the reservoir to the northeast before draining into Little Dry Creek, just east of Friant Rd.

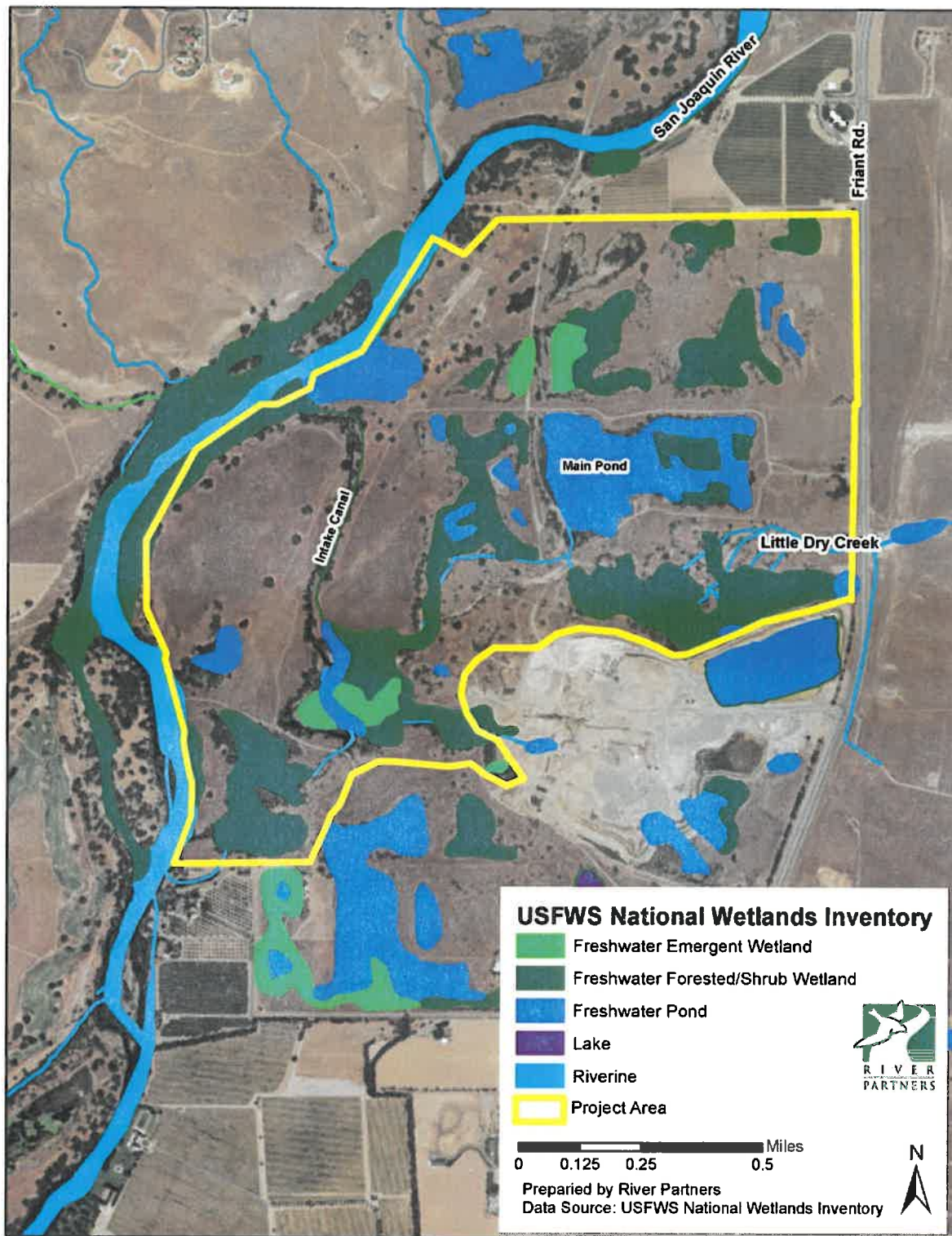


Figure 11. US Fish and Wildlife Service National Wetlands Inventory near Ball Ranch and the Willow Unit, Fresno County, California.

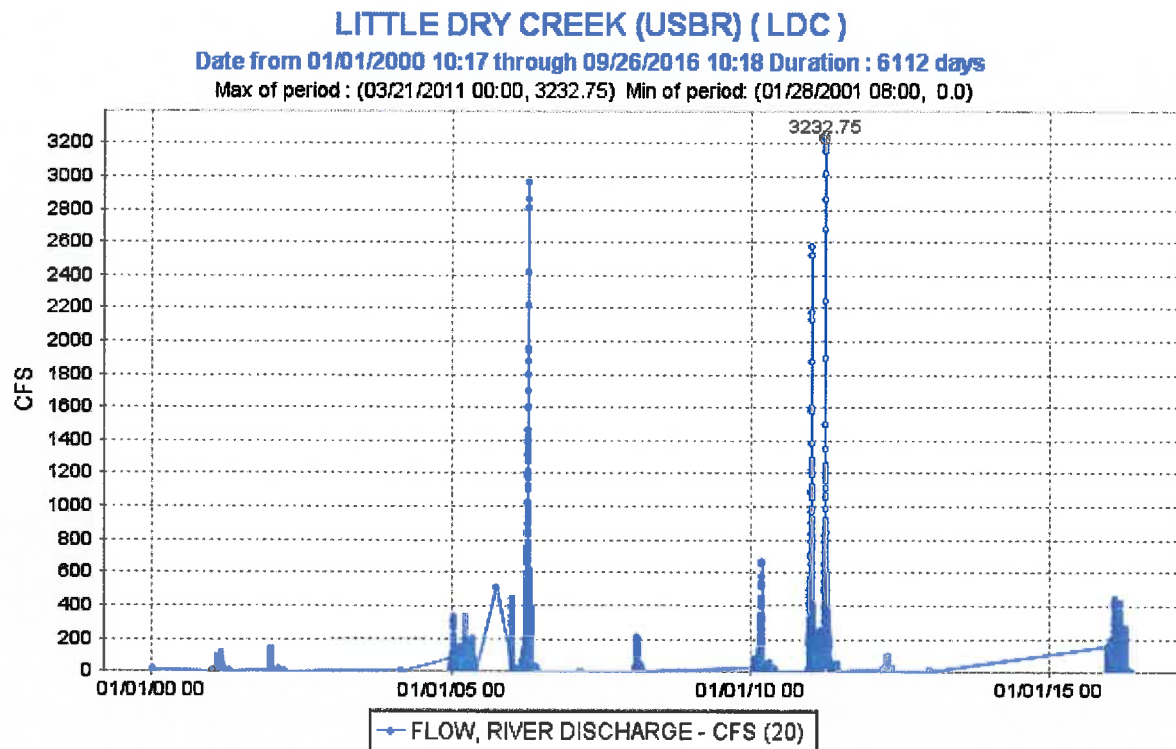


Figure 12. Hydrograph for Water Years 2000 – 2015 on Little Dry Creek, Fresno County, California.

The man-made intake canal conveys water from the San Joaquin River inland to the neighboring gravel mine. Based on historical topographic maps, the canal was constructed sometime between the mid 1950's and 1960's (Figures 13 and 14). It currently holds water year round due to gravel mine operations. Over the decades, several ponds and seasonal wetlands have also been created as relics of previous gravel mining activities. There is a main pond located near the center of the project area which is maintained year round by ground water (SJRC 2005). Several shallower ponds and wetlands are arrayed around the main pond. Due to the variation in depth, each pond and wetland hold water at different capacities. Most of these wetlands and ponds are filled solely with precipitation and/or ground water, although the largest pond also occasionally receives water from Little Dry Creek. Not only do the wetlands and ponds hold water at different capacities compared to each other, the amount of inundation varies from year to year depending on precipitation and the stage of the river and the creek. Inundation levels have dramatically decreased in the past five years of drought as can be seen from aerial imagery (Figure 15).

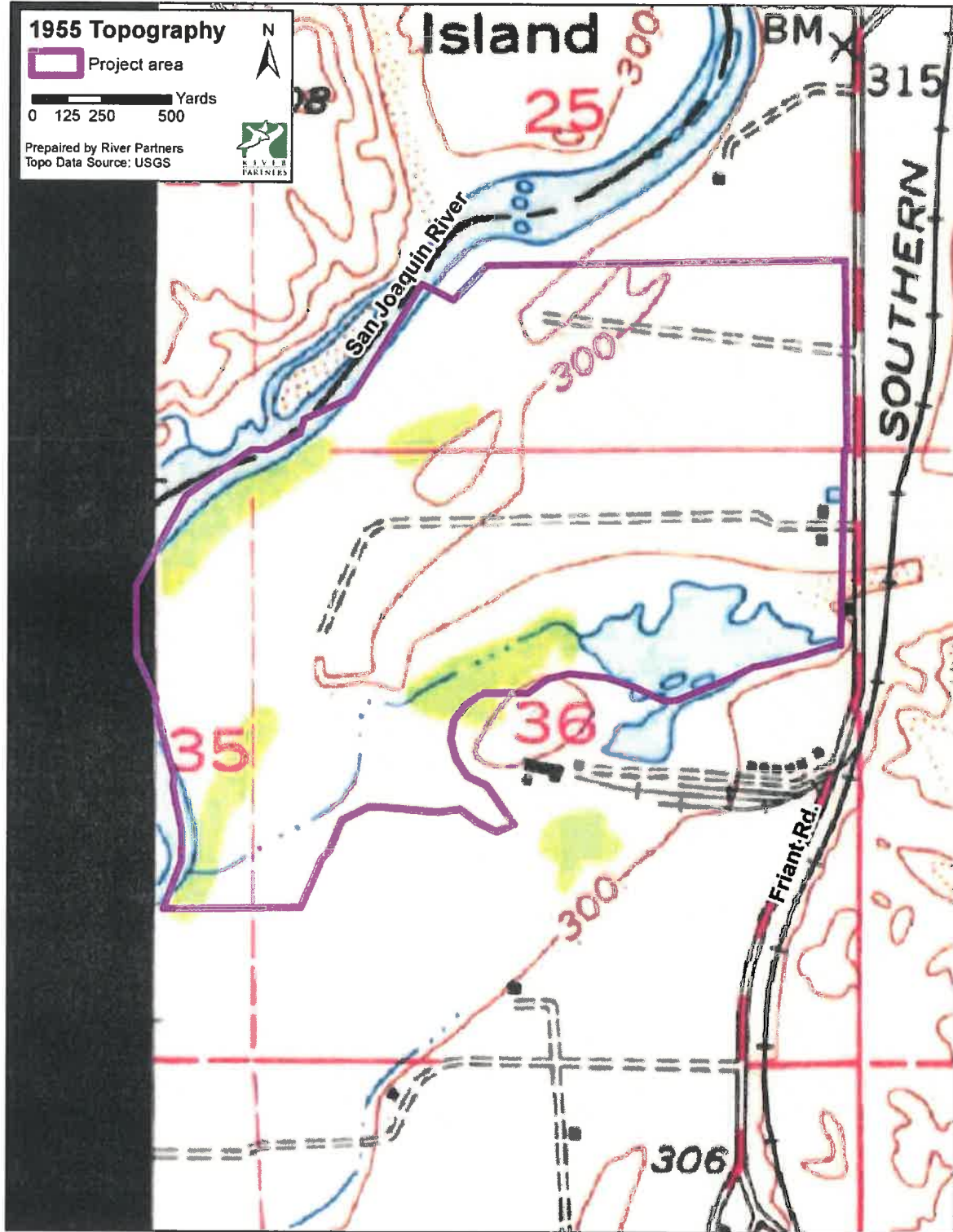


Figure 13. 1955 Topography: Ball Ranch and the Willow Unit, Fresno County, California.

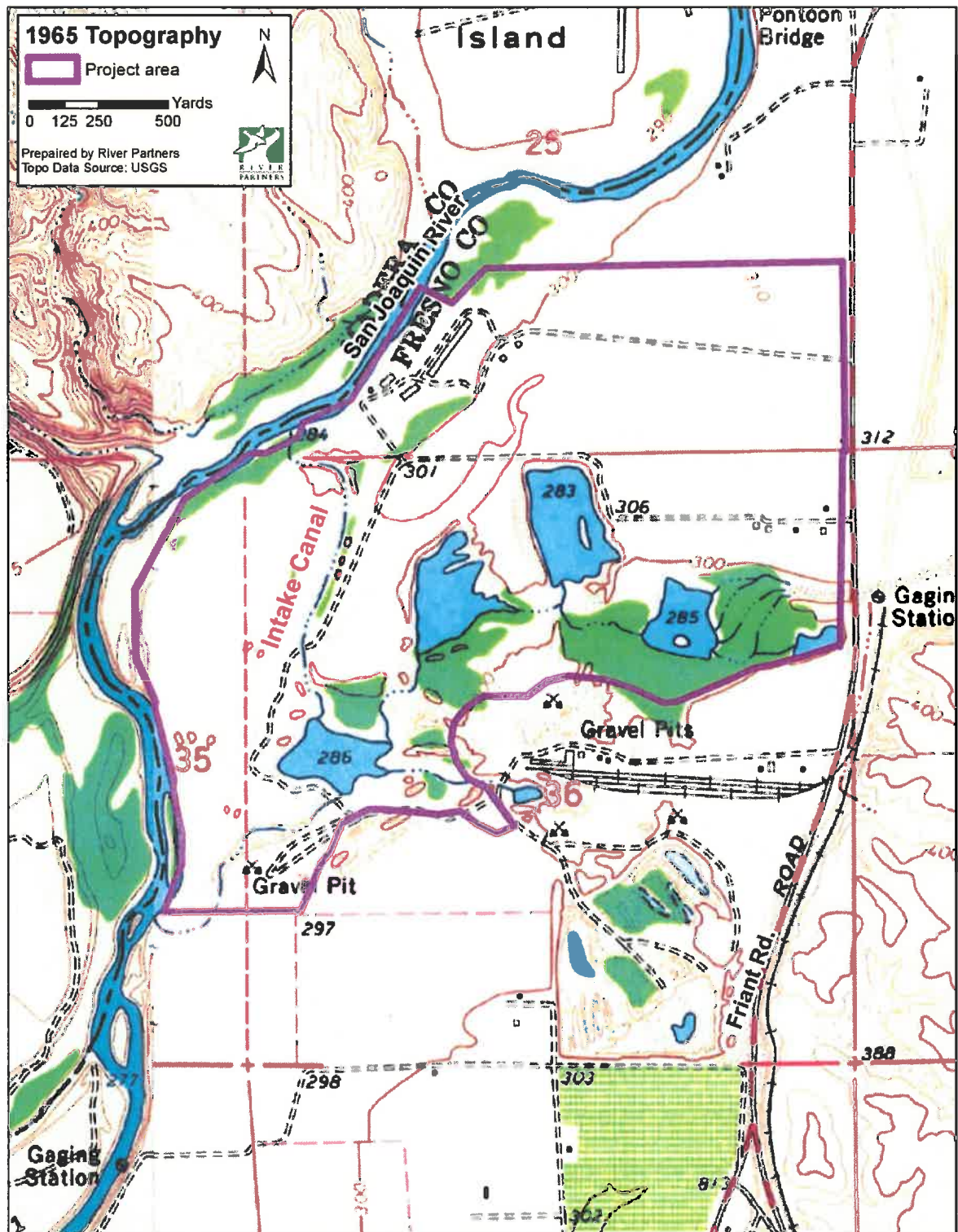


Figure 14. 1965 Topography Which Depicts the Man-made Intake Canal at Ball Ranch and the Willow Unit, Fresno County, California.



Figure 15. Aerial Imagery From 2011 (left) Compared to 2015 (right) of Ball Ranch and the Willow Unit Which Illustrates the Variable Water Capacity of the Ponds and Wetland Areas Depending on the Water Year (Images from Google Earth, Landsat, and Copernicus).

2. Designated Floodway

A portion of both Ball Ranch and the Willow Unit lie within the Central Valley Flood Protection Board's designated floodway (Figure 16). The design flow in this reach of the river is 18,000 – 20,000 cfs which equates to a 100 year flood (DWR 2016). The designated floodway is located within the lowest floodplain terrace and is bound by natural bluffs on the west side of the river and by natural higher topography on the east side of the river. However, two areas within the lower floodplain terrace are 2-5 feet higher than the surrounding floodway and are not considered to be within the designated floodway.

3. Water Table Depth

Knowing the depth to the water table over time at a given site is critical for an accurate site assessment of riparian and associated communities. In 2012, a water table elevation analysis was conducted in order to evaluate the effect of precipitation and the river stage on the groundwater table's fluctuation at the Project area (Escobar 2012). In spring 2012, ten monitoring wells were installed and used to measure the depth to the water table on a biweekly basis over a 90 day period during the rainy season (Figure 16). Data for the stage and flow of the San Joaquin River, as well as precipitation on site was collected over the 90 day period as well. These data were used to create a computer based model which simulated groundwater movement throughout the Project area over the study period in order to better understand the fluctuation of the ground water table and surface water conditions. In general, the water table evaluation analysis showed that ground water moves across the site in an east to west direction. The water table is also influenced by the stage of the San Joaquin River as well as local precipitation events.

River Partners staff revisited each monitoring well in order to collect a static reading of the depth to groundwater and evaluate the effect of the current drought on the water table depth. The depth to the water table from the analysis verses River Partners 2016 data is compared in Table 2 below. Concurrent with the water table evaluation analysis, River Partners found the water table to be on a gradient from east to west, with water table depth being shallowest near the river and deepening with distance from the river. This is expected as the river has less influence with further distance, and the ground elevation increases moving east, away from the river.

In general, the depth to ground water has only dropped approximately 1 foot since 2012. However, River Partners did not monitor during the rainy season as Escobar (2012) did. With an average rainy season, the water table elevation will most likely experience a slight rise. As is, the water table is within potential reach of several different native plant associations on the lower floodplain terrace and would support riparian restoration. Currently, the water table at the uppermost floodplain terrace is not in reach of riparian vegetation and would only support restoration of more xeric vegetation including native grasses.

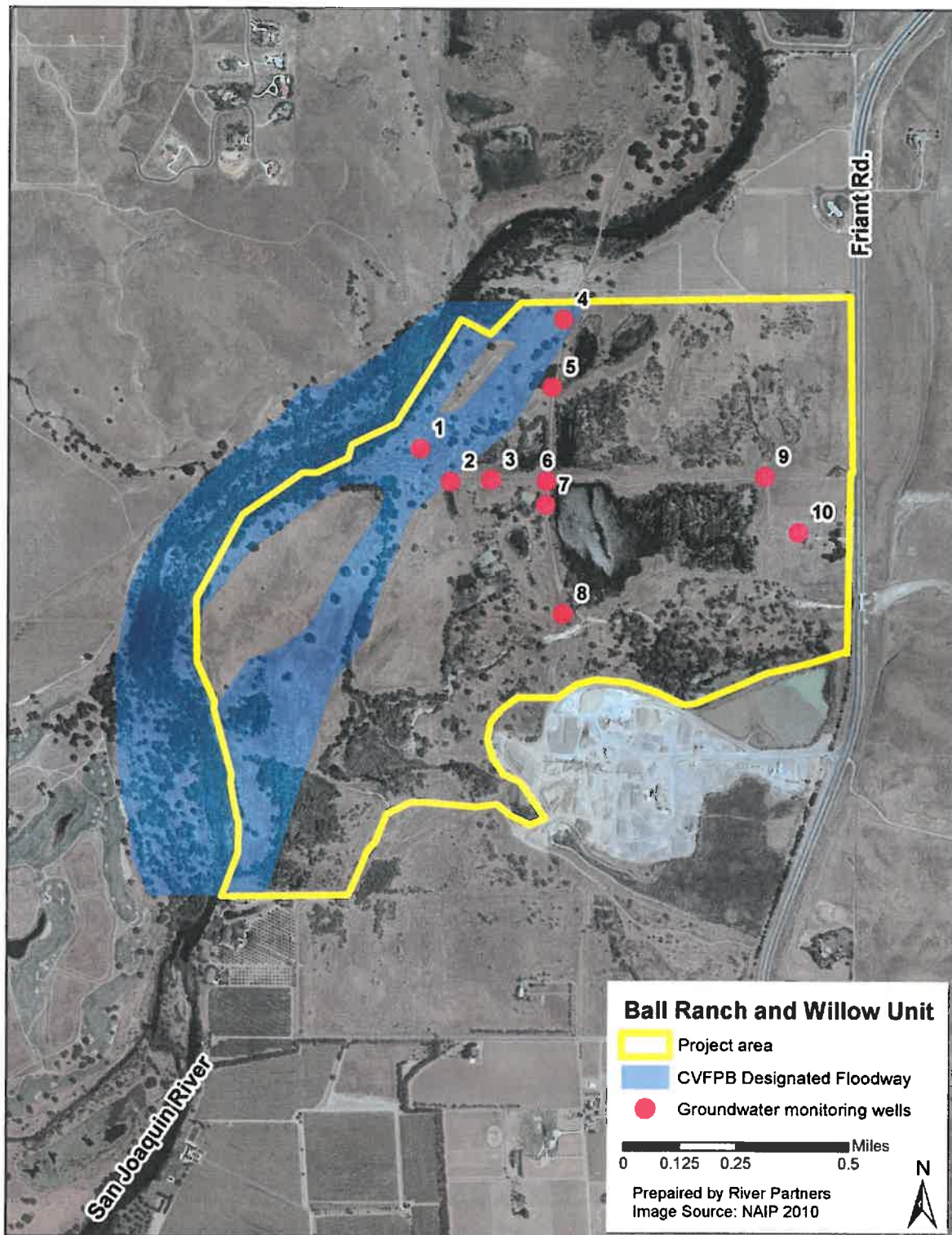


Figure 16. Approximation of the Central Valley Flood Protection Board Designated Floodway and Ground Water Monitoring wells at Ball Ranch and the Willow Unit, Fresno County, California.

Table 2. Depth to Ground Water Table Comparison from 2012 and 2016, Ball Ranch and the Willow Unit, Fresno County, California.

Monitoring Well	Depth to Ground Water (ft) 1/25/2012*	Depth to Ground Water (ft) 11/30/2016	Depth to Ground Water (ft) 12/12/2016
1	15.46	14.7	-
2	19.05	20.02	-
3	19.33	-	23.3
4	14.44	-	14.8
5	17.72	18.9	-
6	20.01	22.1**	-
7	18.33	17.9***	-
8	16.98	18.8**	-
9	26.98	-	25.6***
10	22.82	25.2**	-

*Data from water table evaluation analysis (Escobar 2012)

**Water table not found at the bottom of the monitoring well, however, saturated soil was present.

***Water table not found at the bottom of the monitoring well; soil was relatively dry.

4. Water Quality

Water samples taken from both the San Joaquin River and the main pond were sent to A&L Western Laboratories, Inc. for a general agricultural suitability test which determines the water's suitability for irrigation (Appendix A). In general, water from the San Joaquin River was well within the suitable range for all tested chemicals, pH, electrical conductivity, and dissolved solids. It is ideal for irrigating native plants. Pond water had moderate levels of bicarbonate and a higher electrical conductivity. High levels of bicarbonate could induce several problems including increasing the pH of the soil, decreasing available nutrient uptake, and clogging micro-sprinklers or drip emitters which would all negatively affect plant growth. Based on the electrical conductivity of the pond water, an estimated 0.4 tons of salt per acre/feet of water would be deposited in the soils if used for irrigation. Excess accumulation of salts in the soil would hinder plants' ability to uptake water.

F. Vegetation

Existing and historic vegetation was assessed by reviewing various sources. Historical accounts of riparian forests in the Central Valley are given by Kuchler (1977), Griggs et.al. (1992) and Holland (1986). Several historic photographs of the Project site were reviewed. Historical and ecological accounts of special-status plants in the region were obtained from the California Natural Diversity Database (CDFW 2016) and California Native Plant Society (CNPS 2016). In 2005, URS completed a Biological Assessment Report which also described existing vegetation. Additionally, investigations were performed by River Partners in October and November 2016 to describe the plant communities currently present on site. Due to the seasonality of these investigations, it is likely that the descriptions here are limited in scope only to those species readily observable during the observation period. Appendix B lists plant species found at the Project area in 2016.

The once extensive riparian forests along the San Joaquin River have been reduced to narrow bands of vegetation along the banks of the river, creek, intake canal, and the ponds. Historical photographs show that much of the land at Ball Ranch and the Willow Unit had already been cleared and under agricultural production by or prior to the early 1900's (Figure 2). Due to the conversion to agriculture, and eventually to sand and gravel mining activities, the Project area's conditions vary greatly and range from narrow bands of riparian forests or oak woodland along the waterways, to non-native grasslands within the portion of both terraces that were not mined. The mining activities also created perennial ponds and seasonal wetlands in the remnants of the old borrow pits. The General Resource Assessment Report (URS 2005) documented and mapped vegetation communities and habitat types utilizing the Wildlife-Habitat Relationship (WHR) model as defined by Mayer and Laudenslayer (1998). The report concluded that the project area contained seven different habitat types: valley oak woodland, valley foothill riparian, annual grassland, freshwater emergent, lacustrine, and riverine, and agricultural areas (URS 2005).

River Partners' baseline survey captured the major vegetation types presently found on site based on the Holland (1986) classification system. The Holland classification system presents a more useful description of vegetation communities in the context of active vegetative restoration. It provides a finer detailed description of species diversity and vegetative structure as opposed to the Wildlife-Habitat Relationship (WHR) model which is used to provide an umbrella classification system that can identify vegetative complexes at a landscape scale in order to predict wildlife-habitat relationships. As depicted by the baseline survey, the Project area currently contains seven different vegetation communities including: Great Valley Valley Oak Riparian Forest, Valley Oak Woodland, Great Valley Mixed Riparian Forest, Mule Fat Scrub, Valley Freshwater Marsh, Vernal Marsh, and non-native grasslands (Figure 17, Table 3).

Based upon review of historic descriptions, native riparian forests and oak woodland communities were likely the dominant community types at the Project area prior to agricultural conversion, though the extent, density of plants, and diversity of species would have been much higher than it is today.

Currently, the Project area is dominated by a mixture of invasive weeds including ripgut brome (*Bromus diandrus*), Italian rye (*Festuca perennis*), soft chess (*Bromus hordeaceus*), and yellow starthistle (*Centaurea solstitialis*) on both terraces away from water's edge (Figure 18). Annual invasive weeds have a general life strategy in which they absorb near-surface soil moisture quickly in early spring, then die back and become thatch that shades native seedlings. As a result, they tend to strongly compete with native seedlings for both water and light. Additionally, non-native annual grasses tend to increase the severity of wildfires (e.g. heat and duration) due to their combustibility and thatch-building nature (Reiner 2007; Figure 19). Several populations of non-native invasive trees and shrubs have colonized the site as well (Figure 16 and 19). These species include eucalyptus (*Eucalyptus ssp.*), tree of heaven (*Ailanthus altissima*), tamarisk (*Tamarix sp.*), and sesbania (*Sesbania punicea*).

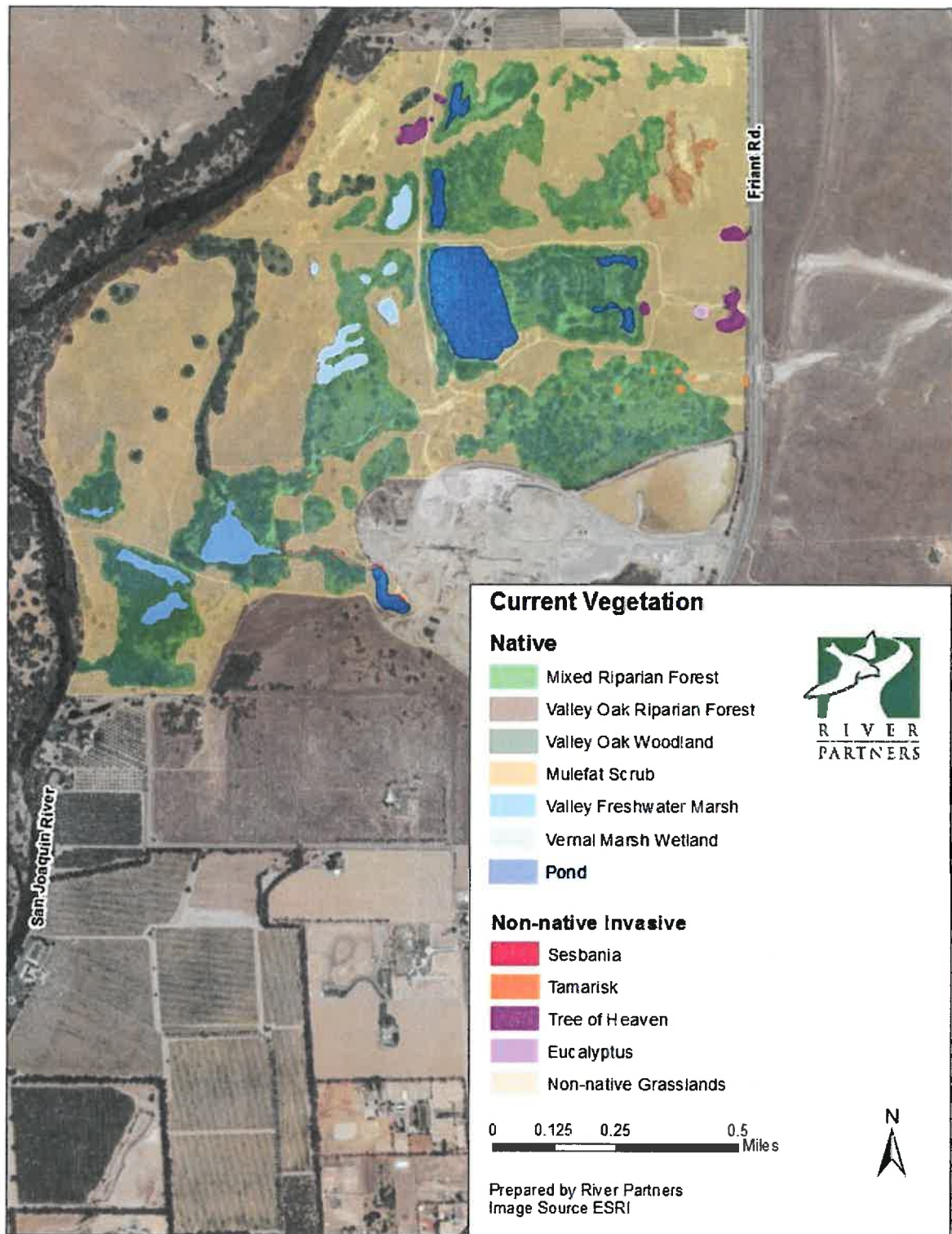


Figure 17. Existing Vegetation Communities at Ball Ranch and the Willow Unit, Fresno County, California.

Table 3. Vegetation Communities Types Found at Ball Ranch and the Willow Unit, Fresno County, California.

Vegetative community	Distribution	Description	Characteristic species	
Great Valley Mixed Riparian Forest	Floodplains of low gradient, depositional streams in the Great Valley. Usually below 500 feet. Formerly extensive in the San Joaquin Valley but now greatly reduced by agriculture and urbanization.	Tall, dense, winter-deciduous, broadleaved riparian forest. Canopy fairly well closed and moderate to densely stocked with several canopy and mid-story species.	<i>Acre negundo</i> <i>Juglans hindsii</i> <i>Platanus racemosa</i> <i>Populus fremontii</i> <i>Salix goodingii</i> <i>Cephalanthus occidentalis</i> <i>Fraxinus latifolia</i>	Boxelder Black walnut Western sycamore Cottonwood Black willow Buttonbush Oregon ash
Great Valley Valley Oak Riparian Forest	Restricted to the highest parts of the floodplain, most distant from or higher above the active river channel. Subject to less physical disturbance from flooding but still receiving annual inputs of silty alluvium and subsurface irrigation.	Medium to tall broadleaf, winter deciduous, closed canopy riparian forest dominated by valley oak.	<i>Quercus lobata</i> <i>Fraxinus latifolia</i> <i>Juglans hindsii</i> <i>Platanus racemosa</i>	Valley Oak Oregon ash Black walnut Western sycamore
Valley Oak Woodland	Located on deep, well-drained alluvial soils, usually in valley bottoms. Intergrades with Valley Oak Riparian Forest near rivers.	Highly variable climax woodland typically forming an open canopy with grassy-understoried savannah rather than a closed woodland. Valley oak is usually the only tree present.	<i>Quercus lobata</i> <i>Elymus triticoides</i> <i>Toxicodendron diversilobum</i>	Valley oak Creeping wildrye Poison oak
Mulefat Scrub	Widely scattered along intermittent streams and near larger rivers, usually below 2,000 feet.	Depauperate, tall, herbaceous riparian scrub strongly dominated by mulefat. This early seral community is maintained by frequent flooding other it would succeed to a cottonwood or sycamore dominated forest.	<i>Baccharis salicifolia</i> <i>Carex barbarae</i> <i>Salix exigua</i> <i>Salix lasiolepis</i> <i>Urtica sp.</i>	Mulefat Santa Barbara sedge Sandbar willow Arroyo willow Stinging nettle
Valley Freshwater Marsh	Sites lacking significant current, permanently flooded by freshwater. Prolonged saturation permits accumulation of deep peaty soils.	Dominated by perennial, emergent monocots 4-5 m tall. Often forming completely closed canopies.	<i>Carex sp.</i> <i>Scirpus sp.</i> <i>Typha sp.</i>	Sedges Tules Cattails

Vegetative community	Distribution	Description	Characteristic species	
Vernal Marsh	Marshy areas with standing water following the winter rains, but greatly reduced or completely dry by summer. Similar to Valley Freshwater Marsh but with greater seasonal fluctuation.	Mostly low growth, primarily of annual herbs, contrasting with the taller perennials in more permanent marshes.	<i>Carex sp.</i> <i>Downingia sp.</i> <i>Juncus sp.</i> <i>Gratolia sp.</i>	Sedges Calicoflower Rushes Hysop
Non-native Grassland	Valley and foothills of most of California, formerly occupied large portions of the Central and Salinas Valleys in areas that are now in urban or agricultural use.	Dense to sparse cover of annual grasses with flowering culms to 1 meter tall. Often associated with numerous species of annual forbs.	<i>Centromadia sp.</i> <i>Phacelia sp.</i> <i>Vulpia microstachys</i>	Spikeweed Phacelia Fescue

From Holland 1986



Figure 18. Invasive Annual Grasses and Yellow Star Thistle Currently Dominate this Floodplain Terrace Identified for Potential Riparian Restoration at Ball Ranch and the Willow Unit, Fresno County, California.



Figure 19. 2014 Wildfire Exacerbated by Non-native Annual Grasses at Ball Ranch and the Willow Unit, Fresno County, California.



Figure 20. Monoculture Tree of Heaven Stand at Ball Ranch, Fresno County, California.

There are no current records of sensitive plant species present on the Project site. However, a small portion of the existing riparian vegetation along the San Joaquin River lies within the federal critical habitat for the succulent owl's clover (*Castilleja campestris* ssp. succulent; Figure 21). Based on the CNDDDB records search, succulent owl's clover is located near the Project site (within the same quad). However, succulent owl's clover are only associated with vernal pools. No vernal pools have been found on site and it is highly improbable that the Project site could contain vernal pools based on the landform and soil series (Witham et al 1998).

Under current conditions, without active restoration, it is unlikely that native vegetation will recolonize the majority of the Project area. Native riparian forests will remain limited to narrow bands along the waterways which still experience flooding or fluctuations in water levels. The oak woodlands will most likely slowly succeed into non-native annual grasslands as oak recruitment is nearly non-existent due to grazing, the competition from non-native annual grasses, the increased fire severity, and the infrequency of seasonal flooding.

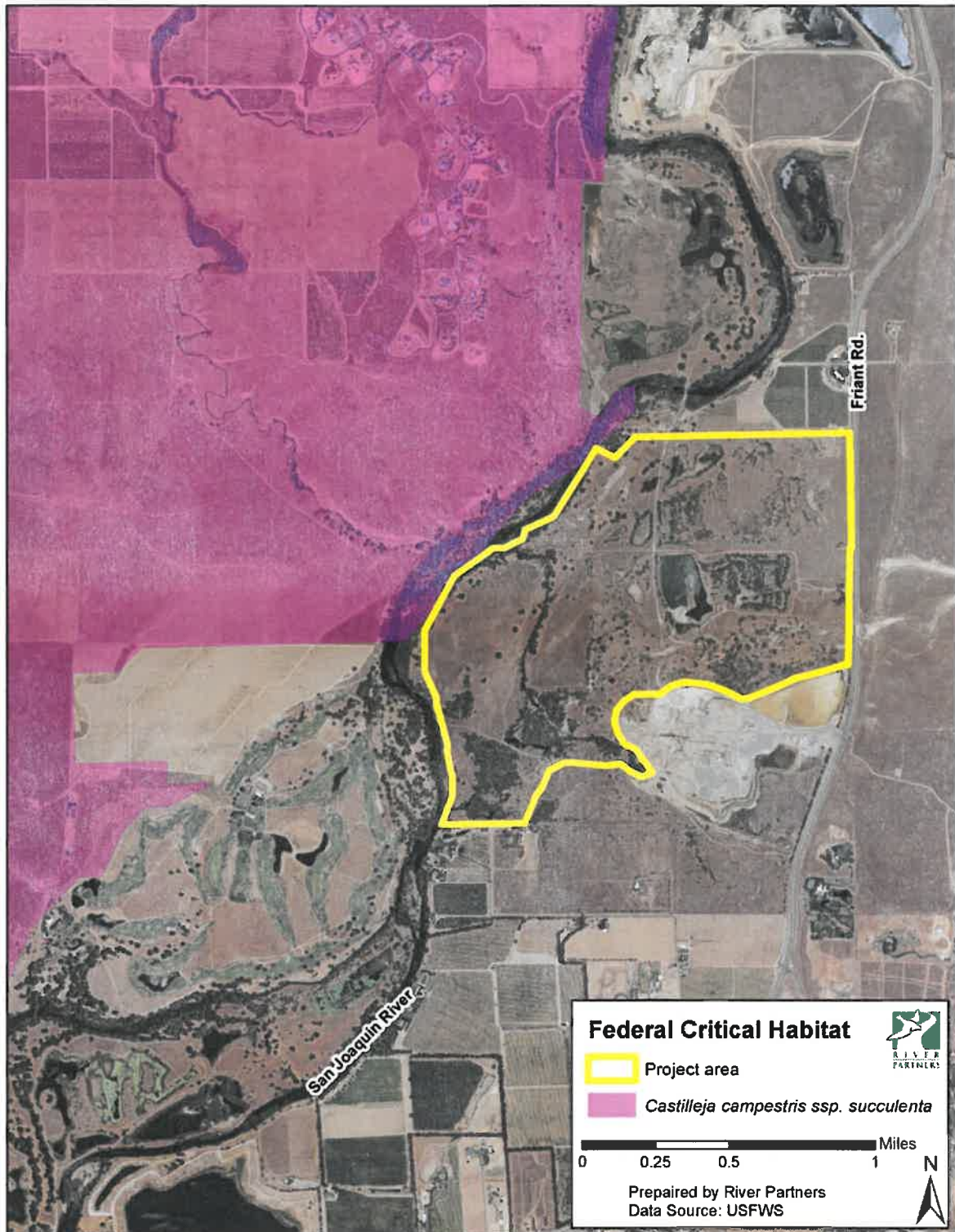


Figure 21. Federal Critical Habitat for Succulent Owl's Clover (*Castilleja campestris ssp. succulenta*) near Ball Ranch and the Willow Unit, Fresno County, California.

G. Wildlife

Even though the Project area has been degraded by human activity, wildlife still actively use the remaining habitat. A comprehensive list of wildlife species which use the habitat types found within Project area was developed during the previous General Resource Assessment (URS 2005). In addition, a nine-quad search was performed within the CNDDB which identified 21 species of special-status wildlife including 10 state or federally listed species (Table 3). Many of the listed wildlife species are either associated with riparian habitat, grasslands, vernal pools or other seasonal wetlands. Central Valley spring-run Chinook salmon were added to the list as reintroduction efforts are currently underway as part of the San Joaquin River Restoration Program (Public Law 111-11 Title X).

Table 4. Federal and State-listed Endangered, Threatened, and State Species of Special Concerns Occurring or Potentially Occurring Near Ball Ranch and the Willow Unit, Fresno County, California.

Species	Status	Habitat Type	Occurrence Potential
Mammal			
Pallid bat (<i>Antrozous pallidus</i>)	SSC	Grasslands	Likely
Western mastiff bat (<i>Emops perotis californicus</i>)	SSC	Grasslands, Conifer and Deciduous Woodlands, Coastal Scrub, Chaparral, Desert Scrub, Urban	Likely
Spotted bat (<i>Euderma maculatum</i>)	SSC	Ponderosa Pine Forest, Marshlands	Unlikely
American badger (<i>Taxidea taxus</i>)	SSC	Open Areas within Most Shrub, Forest, and Herbaceous Habitats with Friable Soils	Unlikely
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	FE, ST	Grasslands, Scrublands, Oak Woodland, Alkali Sink, Alkali Meadow, Urban, Oil Fields, Agricultural Lands,	Unlikely
Sierra Nevada red fox (<i>Vulpes vulpes necator</i>)	ST	High Elevation (Alpine and Subalpine) Conifer	Unlikely
Bird			
Tricolored blackbird (<i>Agelaius tricolor</i>)	SSC	Emergent Marsh, Grasslands, Agricultural Fields	Unlikely
Burrowing owl (<i>Athene cunicularia</i>)	SSC	Sparsely Vegetated or Bare Arid and Semi-arid Lands	Unlikely
Swainson's hawk (<i>Buteo swainsoni</i>)	FT	Oak Woodland, Riparian Forests, Grasslands, Alfalfa	Observed
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	FT, SE	Dense Riparian Forests	Unlikely
Bald eagle (<i>Haliaeetus leucocephalus</i>)	SE	Riparian or Conifer Forests Near River and Large Bodies of Water	Observed
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	FE, SE	Early to Mid-successional Riparian Habitat	Unlikely

Species	Status	Habitat Type	Occurrence Potential
Yellow-headed blackbird (<i>Xanthocephalus xanthocephalus</i>)	SSC	Emergent Marsh	Unlikely
Reptile			
Western pond turtle (<i>Emys marmorata</i>)	SSC	Aquatic	Observed
Coast horned lizard (<i>Phrynosoma blainvillii</i>)	SSC	Open areas within Valley-foothill Hardwood, Conifer, and Riparian Woodlands, Grasslands	Unlikely
Amphibian			
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Grasslands and Low Foothills with Pools or Ponds	Likely
Western spadefoot toad (<i>Spea hammondi</i>)	SSC	Grasslands	Likely
Fish			
Hardhead (<i>Mylopharodon conocephalus</i>)	SSC	Riverine	Unlikely
Spring-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	FT, ST	Riverine	Unlikely
Invertebrate			
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FT	Vernal Pool	Unlikely
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT	Riparian and Upland Habitats with Elderberry Present	Unlikely
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	FE	Vernal Pool	Unlikely

*FE - Federally Endangered

*FT - Federally Threatened

*SE - State Endangered

*ST - State Threatened

*SSC - State Species of Special Concern

H. Infrastructure

1. Roads

Both improved (compacted and graveled) and unimproved (dirt) roads exist on the Project area which were created when the site was under active agriculture and gravel mining activities (Figure 22). These roads were used as a basis for alignment of the proposed internal roadway and trail system described in the Conceptual Ball Ranch Master Development Plan (SJRC 2005).

2. Utilities

A Pacific Gas & Electric Company power line bisects the Project area from east to west, running from Friant Rd. to the bank of the San Joaquin River (Figure 22). This line was installed to power a now defunct river pump (Figure 23). River Partners contacted PG&E and verified that the line is still energized and could be used to re-establish a river irrigation pump. A new panel, meter, and connection are required.

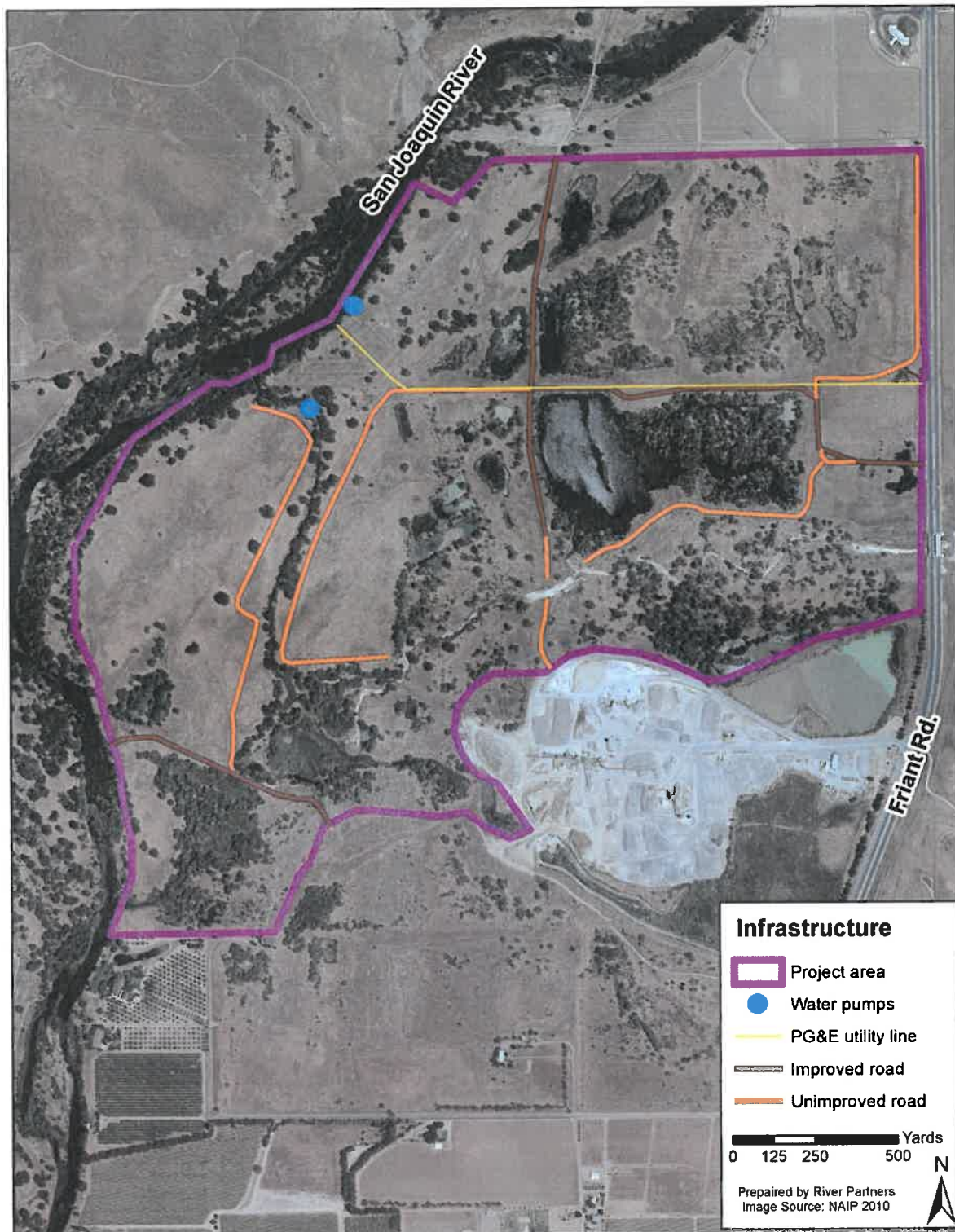


Figure 22. Existing infrastructure at Ball Ranch and the Willow Unit, Fresno County, California.



Figure 23. Abandoned Electrical Panel for the River Pump at the Willow Unit, Fresno County, California.

3. Irrigation infrastructure

Relics of an old irrigation or water conveyance system can be found across the Project area (Figure 21). A dilapidated river pump is still located on the banks of the San Joaquin River, which could be rehabilitated and re-established with PG&E power. A second river pump is also located on the west bank of the conveyance canal; however there is no longer an existing power source nearby. Included with the second pump is a mainline which extends across the conveyance canal in order to get water to the eastern side of the canal. Old cement pressure vents are roughly equally spaced between the canal pump and the main pond indicating that a cement mainline is buried between the two water sources. Three metal mainlines are also protruding from the northern cut-bank of the main pond suggesting that water was either pumped from the pond or delivered to it from the canal.

With all of the existing irrigation infrastructure, several options exist for irrigating future projects. The river pump could be re-established, the canal pump could be re-established, or a new pump could be installed in the main pond. Before an irrigation source is chosen for a new project, an irrigation design company should be consulted to evaluate the water budget for the project, distance from the pump, and size of motor

needed for the pump. Additionally, if irrigating from the river or intake canal, a National Fisheries and Marine Service approved fish screen should be installed on the pumps intake hose in order to avoid the intake of juvenile fish while running the pump.

4. Worm farm

An abandoned worm farm is located in the northwestern portion of the Project area, directly adjacent to the San Joaquin River (Figure 3). It consists of five detention basins, approximately 4-5 feet deep which are interconnected with water checks and drain directly into the river. The design is similar to, but much smaller than, that of rice fields which are interconnected with water checks in order to direct and maintain water throughout each field from a single irrigation point.

5. Cattle fencing

Barbed wire fence encloses the northeast corner of the Project area, mainly on the upper terrace. The fence line is maintained by the current rancher who grazes a few head of cattle on 90 acres of the SJRC Ball Ranch site (Figure 25). Relics of past cattle grazing are found throughout the project area including a loading ramp and derelict portions of fencing.



Figure 24. Detention Basins with Water Check Structures from an Old Worm Farm at Ball Ranch and the Willow Unit, Fresno County, California.



Figure 25. Barbed Wire Fencing is Maintained for Cattle Grazing at Ball Ranch and the Willow Unit, Fresno County, California.

III. TARGETED WILDLIFE SPECIES

Altered river hydrology, land clearing and leveling associated with agriculture and development, gravel and sand mining, overgrazing, and invasion by exotic species have critically degraded riparian habitat in California's Central Valley. A primary goal of the Conceptual Restoration Plan for Ball Ranch and the Willow Unit is to design quality habitat for at-risk wildlife species. Target wildlife species for this project include the western yellow-billed cuckoo, least Bell's vireo, Swainson's hawk, San Joaquin kit fox, California tiger salamander, Central Valley spring-run Chinook salmon, as well as numerous State species of special concern and other riparian bird focal species. In order to develop a restoration strategy and recommendations for the Project area, habitat needs of the target wildlife species need to be considered (Table 6).

Several plans and reports provide important information about the habitat needs and conservation status of these target species. These plans include:

- RHJV Partners in Flight Landbird Conservation Plan
- California Partners in Flight Riparian Bird Conservation Plan
- Recovery Plan for Upland Species of the San Joaquin Valley, California
- California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California
- Draft Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*)
- Draft Recovery Plan for the Least Bell's Vireo
- Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead

Understanding of the link between habitat characteristics and species needs for many of these species is incomplete. The following section provides a description of what we know about target species habitat requirements, and implications for riparian and upland restoration design.

1. Western yellow-billed cuckoo

The western yellow-billed cuckoo is a Neotropical migratory bird that is considered a common breeding bird in the Southeastern U.S., and rare or extirpated throughout much of its historic range in the west. It is declining throughout much of its range. It is a species of open woodland habitats with a large territory requirement. Their diet consists primarily of katydid and sphinx moth larvae. They nest in trees and large shrubs. In the western U.S., cottonwoods and willows are associated with cuckoo species feeding and nesting.

Restoration projects benefiting the western yellow-billed cuckoo should focus on restoring habitat patches a minimum of 20-40 ha (50-100 ac) in size. Because cuckoos in general tend to forage close to their nesting site, patch shape is an important consideration and minimum width of habitat should be 100-200 m (325-650 ft), which

would provide marginal habitat. Optimal habitat for a pair would consist of a habitat patch greater than 80 ha (200 ac), with a width of greater than 600 m (1970 ft). Sites less than 15 ha (38 ac) in size and less than 100 m wide are unsuitable for the western yellow-billed cuckoo (RHJV 2004).

The western yellow-billed cuckoo relies on upland areas in addition to riparian areas for consistent food sources. The cuckoo's primary food sources hibernate underground and are not readily available in lowland floodplains during late-spring flooding. Therefore, upland refugia habitats for foraging in wet years should also be a component of cuckoo habitat restoration projects (RHJV 2004).

Currently, there is no suitable habitat at the Project area and it will likely not support nesting Cuckoos without restoration. Restoration and enhancement of riparian and upland habitats at the Project area would provide potential nesting and foraging habitat for western yellow-billed cuckoos. Over time, in conjunction with other conservation efforts in the region, restored habitat at the Project area could help support the species in the long term.

2. Least Bell's vireo

Least Bell's vireo (*Vireo bellii pusillus*) is a Neotropical migratory songbird that nests in the Central Valley of California during the summer. The historic range of the endangered least Bell's vireo (*Vireo bellii pusillus*) extended from Tehama County, California to Baja California in Mexico (Birds of North America 2009). Formerly abundant in riparian forests of the Central Valley of California, loss of habitat through conversion to agriculture and urban uses and invasion of California by the parasitic brown-headed cowbird (*Molothrus ater*) have contributed to its decline (RHJV 2004). Currently, least Bell's vireo are mainly located in eight counties in southern California (USFWS 1998). However, within the past decade, least Bell's vireo have been documented breeding on restoration sites planted by River Partners on the San Joaquin National Wildlife Refuge. Breeding habitat includes 3-5 year old willow thickets within a dense herbaceous understory (i.e., mugwort). Nests are usually low in a shrub or tree, near the edge of a thicket. A critical structural component is a dense shrub layer 0.6-3 meters above ground (TNC 2000).

Brood parasitism by brown-headed cowbirds is a significant threat to least Bell's vireo populations. Grazing in riparian areas has reduced the habitat preferred by the least Bell's vireo. Grazed areas, row crops, and orchards provide foraging habitat for the brown-headed cowbird (RHJV 2004). Vireos that are forced into fragmented or marginal nesting areas are more vulnerable to parasitism. Minimizing habitat patchiness may reduce rates of cowbird parasitism. Restoring quality breeding habitat and cowbird control have led to population recovery in some areas (Kus 1998, TNC 2000). Water availability, vegetation structure, and proximity to natural habitat were key components of restoration success and use by the least Bell's vireo (Kus 1998). Adequate breeding and nesting habitat for the least Bell's Vireo does not currently exist at the Project area. Restoration of riparian forests with dense understories would promote the conservation of least Bell's vireo.

3. Swainson's hawk

Swainson's hawks (*Buteo swainsoni*) breed throughout western North America and are long range migrants, overwintering throughout Mesoamerica and South America. Historically, their breeding range included most of the Central Valley. However, the conversion of their historical foraging grounds which included seasonal wetlands and grasslands is largely due to their decline in California (Bradbury 2009). At present, Swainson's hawks forage in open areas including alfalfa fields as well as other hay crops. They continue to utilize grasslands as forage areas, but to a lesser degree. During the breeding season, small mammals make up the majority of their diet, however they also prey upon birds, toads, crayfish and insects (Woodridge 1998). Swainson's hawks are not riparian obligate, but the majority in California utilize riparian areas for nesting, as long as the riparian areas are within reasonable distance of foraging grounds. Though Swainson's Hawks nest in a wide variety of trees species and locations, riparian forests and oak woodlands provide large trees which are the primary requisite for nesting substrate (Woodridge 1998).

Restoration projects benefiting Swainson's hawks should focus on restoring riparian forests for nesting habitat as well as restoring native grasslands and managing invasive vegetation in order to increase prey availability. Optimal habitat would include riparian forests which are not surrounded by intensive monoculture ag lands, but rather, hay crops or open grasslands.

Currently, the Project area contains narrow stringers of mature riparian forests along the waterways and highly invaded, non-native annual grasslands in the uplands. Restoration of riparian forests and native grasslands would provide additional potential nesting habitat and improved foraging habitat for Swainson's hawks.

4. San Joaquin kit fox

The San Joaquin Kit Fox historically inhabited most of the San Joaquin Valley including a multitude of habitat types. As with many species native to the San Joaquin Valley however, population decline was driven by the fragmentation and conversion of habitat to agricultural, industrial, and urban development. Though still found throughout the Valley in much fewer numbers, the San Joaquin kit fox continue to utilize a variety of habitats including native, non-native, agricultural and urban communities (Williams et al 1998). Within the central portion of their range, which includes Fresno County, kit fox inhabit several types of scrub communities as well as native and non-native grasslands where they feed predominately on white-footed mice, insects, ground squirrels, and kangaroo rats (Williams et al 1998). They have been found infrequently in eastern Fresno County. Active restoration of native grasslands at the Project area would enhance San Joaquin kit fox habitat by increasing floristic biodiversity, which would improve the food base for the kit foxes potential prey. Over time, in conjunction with other conservation efforts in the region, restored habitat at the Project area could help support the species in the long term.

5. California tiger salamander

California tiger salamanders have a biphasic life cycle which requires both aquatic and terrestrial habitat. Adult salamanders live the majority of their life in underground burrows created by small burrowing mammals. Because they spend the majority of their life underground, little is known about their historical abundance, distribution, and behavior while underground. However, their current distribution suggests that the historic range may have been continuous throughout the valley and foothills within low elevation grasslands and oak woodland communities (Shaffer et al 1993; Shaffer et al 2013). Federally listed critical habitat is located less than a half of mile across the river to the west, as well as approximately 2.5 miles to the east of Ball Ranch in the Little Dry Creek watershed (Figure 21).

In order to reproduce, adult California tiger salamanders require vernal pools or ponds for breeding and metamorphosis. California tiger salamanders migrate in mass to their breeding habitat during a few rainy nights throughout the winter or spring, typically between November and April, although migration does not always happen annually (USFWS 2015). It is estimated that the adults migrate an average distance of 1,844 feet from their upland habitat to a breeding pond, but are capable of migrating up to 1.5 miles (Searcy and Shaffer 2011). California tiger salamanders have been shown to have high site fidelity, migrating back to their natal pond as adults and returning to the same upland habitat after breeding. However, some adults disperse to new breeding ponds, creating a genetic metapopulational structure (USFWS 2015).

Ideal habitat includes grasslands and open woodlands with vernal pools and ponds, including man-made stock ponds that are ephemeral and dry down before August or September. This prevents predators such as bullfrogs and non-native fish from occupying the breeding habitat. Habitat loss and fragmentation is the primary cause for

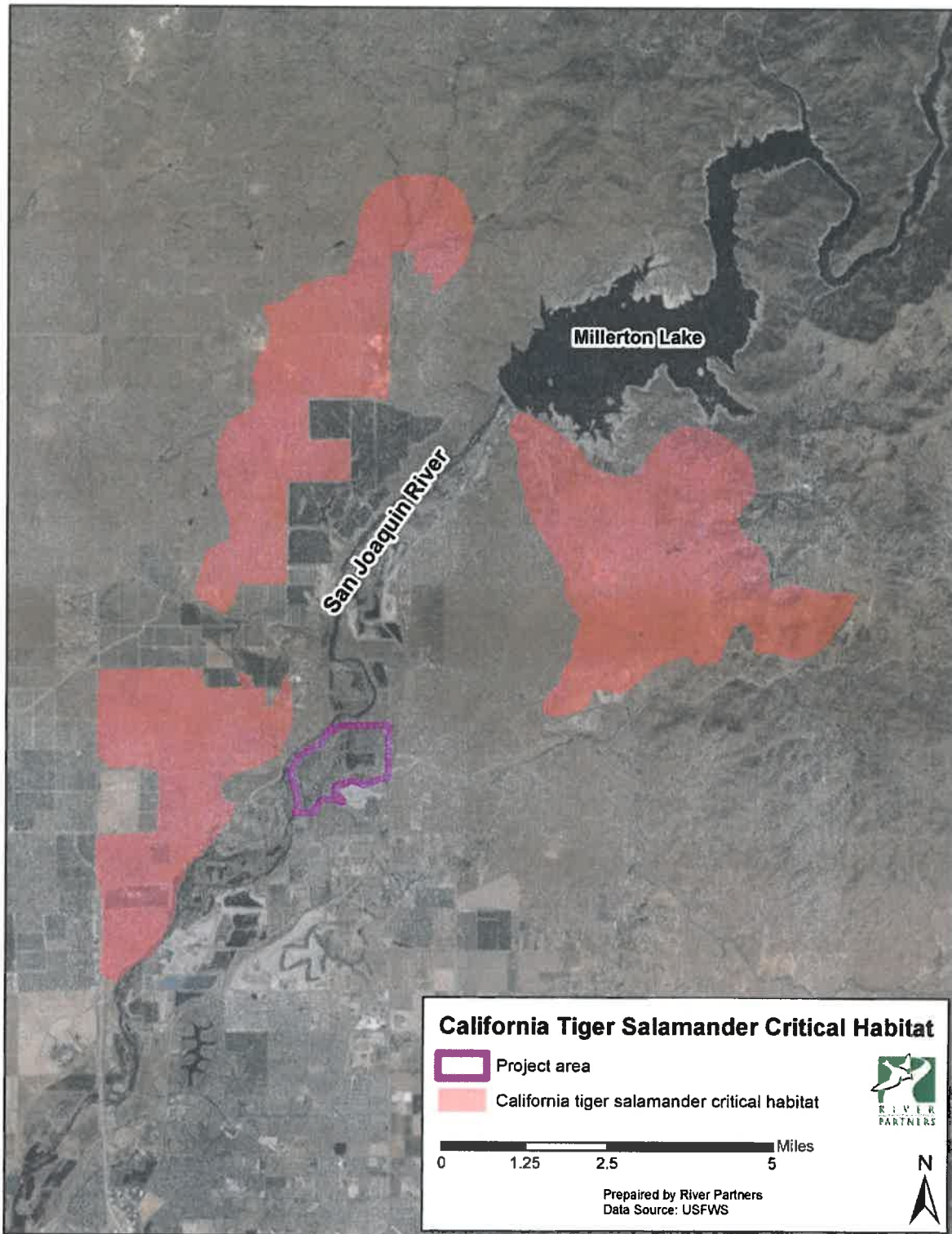


Figure 26. Federal Critical Habitat for the California Tiger Salamander Near Ball Ranch and the Willow Unit, Fresno and Madera County, California.

the decline of California tiger salamanders. Due to the proximity of federally listed critical habitat for the species, restoration of native grasslands and oak woodlands will provide potential upland habitat within the Project area while minor grading of the edges of wetlands may improve breeding habitat for California tiger salamanders.

6. Central Valley spring-run Chinook salmon

Chinook salmon (*Oncorhynchus tshawytscha*) are anadromous fish which were historically abundant throughout the Central Valley's rivers and creeks, utilizing the cold water from the Sierra Nevada's snowmelt for breeding and rearing of juveniles. However, populations of several Evolutionarily Significant Units (ESU) of salmon, including the Central Valley Spring-run ESU, have become threatened or endangered. Population declines are attributed to habitat loss and destruction caused historically by hydraulic mining and exacerbated more recently by water diversions, levees, and dams built to support agriculture and urbanization. These water projects have caused the loss of at least 48% (1,057 miles) of stream and river courses that were historically accessible to Chinook salmon (NMFS 2014). Currently, native spring-run have been extirpated from all San Joaquin River tributaries. However, a Central Valley spring-run reintroduction effort is being undertaken on the San Joaquin River by the Bureau of Reclamation and others as part of the San Joaquin River Restoration Program.

Adult Central Valley spring-run chinook salmon typically return from the Pacific Ocean and migrate up the Sacramento River and its tributaries in late January to early February. Adults hold in deep pools with cold water, where they undergo sexual maturity before spawning in mid-August to early October (NMFS 2014). Juvenile spring-run then typically reside in the freshwater river system for 12 to 16 months before migrating out to the ocean.

Seasonally inundated floodplains have been shown to provide the best growing conditions for juvenile Chinook salmon (Jeffries et al 2008) and have been identified in the recovery plan as an essential habitat element for their recovery (NMFS 2014). Seasonally inundated floodplains can provide ample phytoplankton and algae production (Ahearn et al 2006), which in turn supports an abundance of zooplankton that juvenile salmon feed upon. Because of the water infrastructure in the valley (e.g. dams and levees), only 5% of historical floodplains currently remain.

In 2015, River Partners collaborated with researchers from CalTrout, UC Davis Center for Watershed Science, and the Department of Water Resources as an extension to their *Knaggs Ranch Experimental Agricultural Floodplain Habitat Investigation* which assessed the growth rates of juvenile salmon within flooded agricultural floodplains compared to juveniles in the Sacramento River. As an extension of the project, River Partners reared juvenile salmon on three acres of agricultural floodplain near the confluence of the San Joaquin and Tuolumne Rivers. The floodplain was artificially flooded using an existing river pump and juvenile salmon were reared for four weeks. After the four weeks, the salmon were measured and sent to the Department of Water Resources for gut-content analysis. Final results showed similar results to the Knaggs Ranch project site: salmon nearly doubled in length and increased five-fold in weight.

The Knaggs Ranch Project also showed that salmon reared on the floodplain grew 700% faster than salmon in the river and that zooplankton was 14,900% greater per cubic meter of floodplain as compared to the river (CalTrout 2016).

Opportunities for seasonally inundated floodplain restoration exist at the Project area, specifically at the old worm farm. By manually flooding and maintaining the interconnected detention basins of the worm farm, seasonal floodplain habitat could be created and managed in non-flood years. If manual flooding and management is not an option, the walls of the detention basins could be removed and the topography could be graded down to ecologically significant height in which an area of floodplain would become inundated more frequently by natural flows and water releases. The detention basins should also be graded to positively drain flood water back into the river in order to prevent fish stranding.

7. Pallid bat

The pallid bat is common to the lower elevation throughout most of California, typically inhabiting open, dry habitats with rocky areas nearby for roosting. These bats feed nocturnally on a wide variety of insects which they typically take off the ground. Although pallid bats usually forage by flying slowly over open ground looking for prey, they are also known to glean insects as well. During the day, pallid bats roost in groups, preferably in crevices of rocky outcrops and cliffs which are located 1-3 miles from foraging areas. Restoration of native grasslands will improve foraging habitat by removing the duff layer of the non-native annual grasses and restoring native bunch grasses which would create more open areas on the ground.

8. Western mastiff bat

The western mastiff bat is the largest native bat in the United States and is an uncommon resident of the southeastern San Joaquin Valley. During the day, these bats roost in crevices in cliff faces, trees, or high buildings. At night, western mastiff bats forage in open, semi-arid to arid habitats including grasslands which can be up to 15 miles from the roost site. Western mastiff bats typically catch and eat insects in flight. Restoration of native grasslands will increase the local flora diversity at the project area which in turn increases the food base for many species of insects.

9. Tricolored Blackbird

Tricolored blackbirds are native and permanent resident of California, with the Central Valley hosting over 90% of all breeding adults (Shuford et al 2008). They form breeding colonies in emergent marsh vegetation or the canopy of willows with nests typically 1.5 meters above water or ground. Tricolored blackbirds' habitat requires accessible water, protected nesting substrate, and areas nearby by with plentiful insects for foraging. Grading and enhancement of the wetlands at Ball Ranch would increase the potential nesting habitat by increasing the amount of emergent marsh vegetation.

10. Yellow-headed Blackbird

Yellow-headed blackbirds breed throughout the western U.S. and migrate to western and northern Mexico to overwinter. As with many species in decline, loss of over 90% of

wetlands in the Central Valley has greatly contributed to its decline (Shuford et al 2008). Yellow-headed blackbirds breed almost exclusively in tall, emergent marsh vegetation. Nests are generally located on the vegetative edges over deep water, ideally 30 cm or deeper. Grading and enhancement of the wetlands at Ball Ranch would increase the potential nesting habitat by increasing the amount of emergent marsh vegetation with sufficient edge habitat.

11. Western Spadefoot Toad

Western spadefoot toads primarily inhabit grasslands throughout the Central Valley and foothills. They have a biphasic life cycle which requires both aquatic and terrestrial habitat. Adults live the majority of their life in underground burrows created by themselves. In order to reproduce, adult western spadefoot toads require shallow, temporary pools filled with winter rains. Adults' migration to their breeding habitat is associated with rains and high humidity, typically from late winter through March. Ideal habitat includes grasslands with shallow, rain-filled pools. Restoration of native grasslands at the Project area will create ideal upland habitat for the western spadefoot toad, while improving and maintaining the diversity of wetland depths will also help to create breeding pools during differing water years.

Table 5. Summary of Habitat Requirements for Targeted Federally and State-listed Wildlife Species at the Ball Ranch and Willow Unit, Fresno County, California.

Target Species	Status	Habitat Requirements	Design Goals/Considerations
Western Yellow-billed Cuckoo (<i>Coccyzus americanus occidentalis</i>)	FT, SE	Riparian habitat dense with willow and cottonwood species.	Plant diverse vegetative structure, shrub clusters, willow thickets, and dense understory.
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	FE, SE	Structurally diverse riparian woodlands, including cottonwood-willow forests, oak woodlands, dense shrubs.	Restore suitable nesting habitat; Plant diverse vegetative structure, shrub clusters, willow thickets, and dense understory.
Swainson's Hawk (<i>Buteo swainsoni</i>)	FT	Riparian habitat with mature trees suitable for nesting sites adjacent to productive foraging habitat.	Restore suitable nesting habitat; Plant diverse vegetative structure, shrub clusters, willow thickets, and dense understory.
Fresno Kangaroo Rat (<i>Dipodomys nitratoides exillius</i>)	FE, SE	Grassland, chenopod scrub, and alkali sink outside of the floodplain.	Control non-native annual grasses and invasive plants; Seed a diverse mix of native perennial grasses and forbs in upland areas outside of the floodplain.
San Joaquin Kit Fox (<i>Vulpes macrotis mutica</i>)	FE, ST	Open areas of grasslands, scrublands, oak woodlands, alkali sinks, oil fields, agricultural and urban areas.	Control non-native annual grasses and invasive plants; Seed a diverse mix of native perennial grasses and forbs in upland areas outside of the floodplain.
California Tiger Salamander (<i>Ambystoma californiense</i>)	FT, ST	Grasslands with vernal pools or ponds.	Control non-native annual grasses and invasive plants; Seed a diverse mix of native perennial grasses and forbs in upland areas outside of the floodplain. Grade edges of ponding areas to enable access, and prevent trapping.
Valley Elderberry Longhorn Beetle (<i>Desmocerus californicus dimorphus</i>)	FT	Riparian and associated upland habitat in the Central Valley where blue elderberry, the beetle's host plant, grows.	Plant elderberry plants in riparian shrub habitat.
Central Valley Spring-run Salmon (<i>Oncorhynchus tshawytscha</i>)	FT, ST	Ephemeral floodplains for juvenile rearing.	Manage existing basins as floodplain habitat or grade basins to form naturally flooded rearing habitat.

Target Species	Status	Habitat Requirements	Design Goals/Considerations
Pallid Bat (<i>Antrozous pallidus</i>)	SSC	Open, arid to semi-arid habitats with rocky areas nearby for roosting.	Control non-native annual grasses and invasive plants; Seed a diverse mix of native perennial grasses and forbs in upland areas outside of the floodplain.
Western Mastiff Bat (<i>Emops perotis californicus</i>)	SSC	Open, arid to semi-arid habitats with rocky areas nearby for roosting.	Control non-native annual grasses and invasive plants; Seed a diverse mix of native perennial grasses and forbs in upland areas outside of the floodplain.
Tricolored Blackbird (<i>Agelaius tricolor</i>)	SSC	Emergent marshes with open water and nearby areas for foraging.	Contour shallower slopes on the existing wetlands to increase suitable area for emergent marsh vegetation.
Yellow-headed Blackbird (<i>Xanthocephalus xanthocephalus</i>)	SSC	Emergent marsh with sufficient edge habitat and deep water.	Contour shallower slopes on the existing ponds to increase suitable area for emergent marsh vegetation.
Western Spadefoot Toad (<i>Spea hammondi</i>)	SSC	Grasslands with shallow rain-filled pools for breeding.	Control non-native annual grasses and invasive plants; Seed a diverse mix of native perennial grasses and forbs in upland areas outside of the floodplain.

*FE - Federally Endangered

*FT - Federally Threatened

*SE - State Endangered

*ST - State Threatened

*SSC - State Species of Special Concern

12. Riparian Focal Species

Songbirds are excellent indicators of ecosystem health because they are abundant, distributed within and across habitats, and are sensitive to changes in food supply, vegetation cover, and predator densities. The Riparian Habitat Joint Venture has identified several species of birds as indicators of ecologically healthy riparian systems (RHJV 2004). These species are termed riparian focal species. These species utilize different areas on the floodplain (e.g., gravel bar, woodland, and wetland) and are found in different types of vegetation (e.g., dense shrubs, tree-tops, various understory structures; Figure 27). There is a wide range of spatial and structural habitat requirements among the species (Table 7). For example, the common yellow-throat can have a breeding and foraging territory as small as 0.5 ha (1 ac), while the yellow-billed cuckoo needs a minimum of 20 ha (50 ac). Some species are not compatible living adjacent to agricultural operations, while the blue grosbeak will nest along roadways and forage in certain types of cultivated crops.

Reproductive success on the breeding grounds, which is affected by many factors, is the primary factor limiting populations of migrant landbirds (RHJV 2004). The reproductive success of many bird species can be significantly reduced by high levels of brood parasitism by Brown-headed Cowbirds and nest predation by native and non-native species, both of which are heavily influenced by the structure and diversity of riparian vegetation (RHJV 2004). Avian productivity is also affected by the size and isolation of remnant riparian patches and surrounding land use (RHJV 2004). For example, densities of nest predators and brood parasitism can increase with the degree of habitat fragmentation and increase of habitat edges. These effects also depend on surrounding land use and are often stronger in agricultural landscapes (RHJV 2004).

Restoration efforts will provide high quality habitat for migratory and resident native wildlife species. River Partners specifically designs habitat features into the restoration based on the habitat needs of each target species.

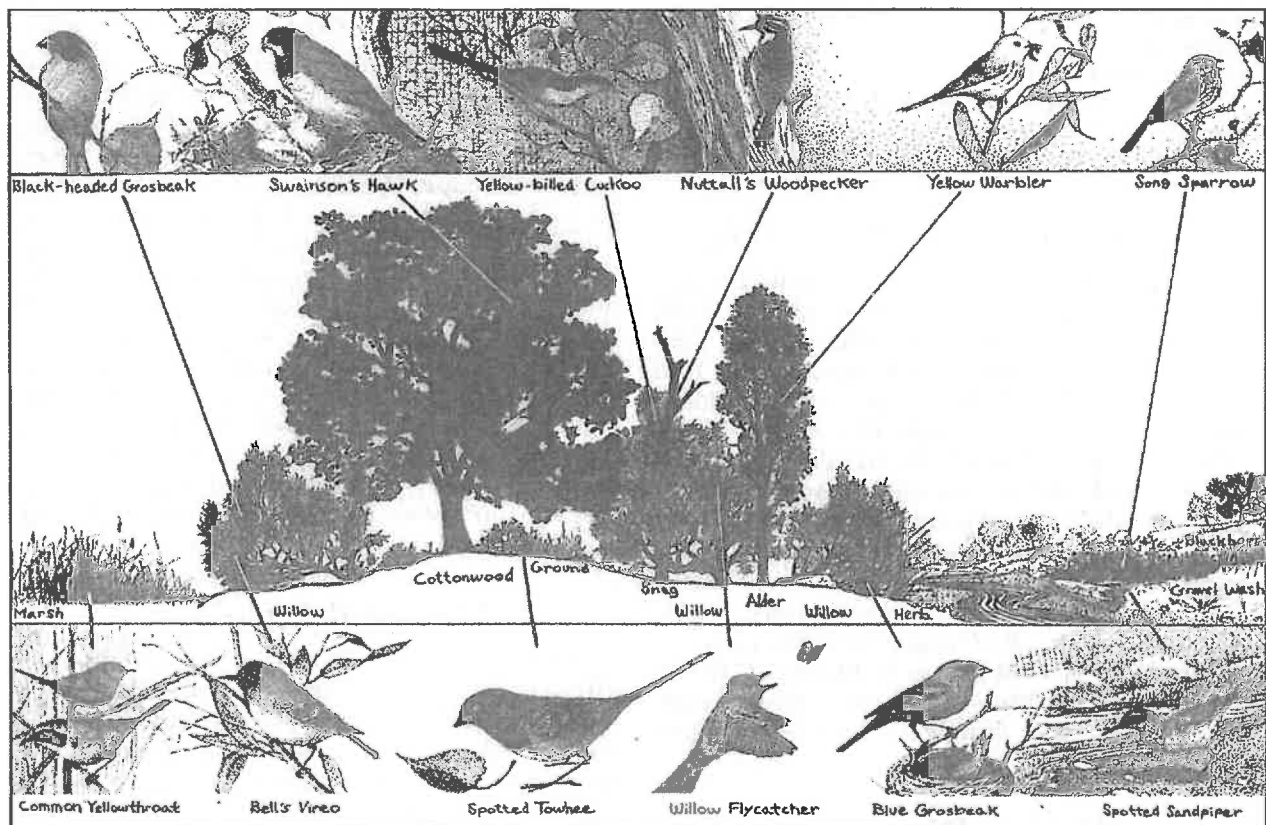


Figure 27. Riparian Songbirds and their Habitat Requirements (RHJV 2004).

Table 6. Summary of Neotropical Migrant Bird Habitat Requirements (RHJV 2004).

Bird Species	Territory/Patch Size	Proximity to Water	Vegetation Structure	Nesting	Species Presence
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	0.8-1.2 ha (2-3ac); >250m wide patch	Within 300m	Dense willow shrubs 3-5m tall; mugwort understory	Nest low, within 1m of ground	Extirpated Rare
Black-headed Grosbeak (<i>Pheucticus melanocephalus</i>)	200m x 50m	50-300m	Vertical complex - Cottonwood, willows, wild grape	Nest height 3-4m	Breeding Common
Blue Grosbeak (<i>Guiraca caerulea</i>)	----	In riparian zone	Low herbaceous, upright stems, open canopy	Nest height 0.6-3m	Breeding Rare
Common Yellow-throat (<i>Geothlypis trichas</i>)	0.4-2 ha (1-5 ac)	In riparian zone	Tall emergent wetland edges	Nest height 0-0.6m	Breeding Fairly Common
Song Sparrow (<i>Melospiza melodia</i>)	Variable	Near, within 50m	Open canopy; dense herbaceous layer; gumplant, evening primrose	Low to ground; <1m	Breeding Common
Swainson's Hawk (<i>Buteo swainsoni</i>)	Variable, depending on proximity to foraging habitat	Not riparian obligate	Tall trees in riparian zone near open foraging areas	Nest in tall trees	Breeding Fairly Common
Warbling Vireo (<i>Vireo gilvus</i>)	1.2 ha (3 ac)	Associated with streams	Large trees with semi-open canopy	Variable height	Breeding Fairly Common
Willow Flycatcher (<i>Empidonax traillii</i>)	<1.0 ha (<2.5 ac)	Nests near water	Dense willows; 0-3m height of dense cover, low tree cover	Nests near water; height 0.6-3m	Breeding Rare
Wilson's Warbler (<i>Wilsonia pusilla</i>)	0.4-1.2 ha (1-3 ac)	Nests near water	Willow, alder, and shrub thickets	Usually nests on ground	Breeding Fairly Common
Yellow-breasted Chat (<i>Icteria virens</i>)	<5 ha (<12 ac)	Prefers near wetlands	Dense thickets of willows and blackberries	Nests in vines and shrubs	Probable Breeder Rare
Western Yellow-billed Cuckoo (<i>Coccyzus americanus occidentalis</i>)	8-40 ha (19.8-98.8 ac)	Nests near or over water	Willow-cottonwood thickets	Nest 1.3-13m high	Extirpated Rare
Yellow Warbler (<i>Setophaga petechia</i>)	0.06-0.75 ha	Wet areas	Willows, cottonwoods, early Successional	---	Probable Breeder Fairly Common

IV. CONCEPTUAL SITE MODEL

This conceptual site model provides a synthesis of the site information and describes our current understanding of the physical and biological factors that influence the ecology of the site.

A. Past Environmental Conditions

Prior to the construction of Friant Dam in the 1940's, the Project area was still influenced by seasonal flooding. Lateral meander is evident by the deposition of river cobble across the site. Remnants of a once lush riparian corridor are visible along the river channel, but after the construction of Friant Dam, changes in hydrology reduced the connection of native vegetation to the water table and the conversion of land to agriculture and gravel mining damaged floodplains. With the construction of the dam and the subsequent agricultural and gravel operations, the river remained fixed over time in its current channel and native vegetation has yet to recover on the majority of the Project area.

B. Likely Successional Patterns without Restoration

The San Joaquin River has been dammed and much of its flows are diverted into irrigation canals or released to be pulled out for irrigation further downstream. Many riparian plant species rely upon seasonal flooding for mineral substrate deposition, seed dispersal, and seed germination. Because of the lack of flooding, natural regeneration of riparian forests at the Project area is limited. In addition, the uplands have been converted into a non-native annual grasslands which tends to outcompete native grasses by germinating sooner, extracting near-surface moisture, and creating a thick layer of mulch after setting seed which prevents most native species from receiving sunlight. Without the control of non-native annual grasses, the majority of the Project area will not be able to sustain the regeneration of native plants.

Without restoration, the site will provide unsuitable conditions and poor habitat for riparian obligate species, including the species being targeted by this conceptual design. In the absence of restoration, succession is likely to follow the pattern we have observed on abandoned floodplains on many Central Valley Rivers. Aggressive non-native species, such as tree of heaven, sesbania, yellow star thistle, and annual grasses would compete for sunlight and moisture and competitively exclude native seedlings.

If restoration does not occur, the restricted width of the riparian corridor will hold or possibly be reduced without natural recruitment, and the extent and health of the remnant habitat would decline. Riparian habitat would be sustained only along the low flow channel of the river, with small patches of vegetation supported by occasional flows in Little Dry Creek, and along the edges of ponds which intercept ground water. This habitat will limit the extent of riparian habitats and the number of avian species using the site for reproduction and migration. The patchy arrangement of mature tree specimens will facilitate avian nest parasitism by brown-headed cowbirds that would prevent expanded use of the site by listed or sensitive bird species such as the least Bell's vireo.

Because brown-headed cowbirds prefer nest sites along the edges of forests, the fragmented patches of remnant habitat and thin bands of native forest types have created ample edge habitat which facilitates nest parasitism by the cowbird.

C. Comparison to Nearby Vegetation (Reference sites)

A fundamental component of a habitat opportunities analysis is the identification of reference sites. These sites act as guides for developing the list of species to be planted and their pattern across the restoration site. Due to the long history of human modifications to flow patterns and topography, undisturbed reference sites near Ball Ranch and the Willow Unit are virtually non-existent. Narrow bands of mature vegetation including Valley oak, sycamore, willows, and cottonwoods are found along the river's edge both up and downstream from the Project area. Most of the river's floodplain had already been used for agriculture and mining by the early 1900's so it is difficult to determine plant composition.

Today, native riparian vegetation at the Project area still maintains some diversity in narrow bands along the edge of water features. Patches of blue elderberry, Valley oak, and native forbs are still found spread throughout the upper terrace. Stands of mixed willows and mulefat can still be found around certain wetlands which were created by past gravel mining activity. However, fewer native plants exist further away from water features. The plant communities of nearby lands contain similar vegetation as they have undergone similar histories.

D. Restoration Strategies

River Partners recommends the following strategies to implement habitat restoration on Ball Ranch and the Willow Unit:

1. Employ active restoration techniques

The Project area has been recovering from gravel mining since the 1980's, with little manipulation, resulting in fragmented native habitat, and narrow, low-density riparian habitat.

Passive restoration involves minimal input to restore riparian forests including site preparation and managed flooding to mimic the historic recession limb of the annual hydrograph. Unfortunately, the natural hydrology of the San Joaquin River will never be restored. Additionally, non-native weeds germinate and rapidly outgrow tree seedlings, slowing their growth and eventually killing them through shading effects and competitive water use. This passive method has not been successful in the Central Valley for large-scale riparian restoration projects. The logistics of weed control in large-scale passive restoration would be prohibitively complex and expensive. Passive restoration typically results in forests of low species and structural diversity, which would limit wildlife value compared to a more diverse forest, composed of several species of trees and shrubs.

River Partners' active restoration technique employs modern farming techniques to efficiently and rapidly establish riparian vegetation. This type of restoration has been successful on over 8,000 acres of restored floodplain riparian habitats in the

Sacramento and San Joaquin Valleys. Tasks include site preparation, native plant species propagation and planting, on-going weed control, and irrigation throughout the growing season for three to five years. Advantages of this method include the ability to conduct large-scale restoration resulting in diverse riparian vegetation and high quality wildlife habitat in a relatively short number of years. Since this method uses essentially the same techniques as those used to establish commercial orchards, overall costs can be reduced and local farmers, community groups, and volunteers can be used to carry out portions of the implementation, creating a great outreach benefit. River Partners' techniques have been adaptive and improved over time; for example, planting is in rows to allow efficient cultivation, but the rows are curvilinear so that the mature forests do not look like an agricultural orchard.

2. Recognize current site conditions and management objectives

The riparian vegetation to be restored is suggested with consideration of the current physical and biological site conditions (i.e., leveled fields, borrow pits, altered hydrology, weed pressure, etc.), wildlife needs, and landowner and neighbor concerns. The target vegetation is not a "historical" endpoint, but is based on a pragmatic assessment of current site conditions (i.e., altered hydrology and weed pressure). Based on these conditions, approximately 161 acres of the site are well suited for the rapid establishment of native riparian woody species and herbaceous understory species through active restoration and enhancement. An additional 95 acres are suitable for native grassland restoration with scattered groves of drought resistant shrubs. 58 acres are suited for marsh restoration through sculpting activities. Additionally, the Project area has approximately 6 acres that would be suited for managing or restoring a frequently inundated floodplain.

Approximately 195 acres are suitable for enhancement of existing habitat. In this report, "enhancement" is a catch-all term for areas that contain remnant native vegetation and do not lend themselves to large scale vegetative restoration, but rather targeted weed control activities. Activities could include hand weeding, herbicide applications, and broadcasting seeds of native understory plants.

3. Link existing habitat patches with restoration plantings to increase habitat connectivity

Currently the majority of available habitat is in a thin band along the San Joaquin River and Little Dry Creek as well as the margins of the ponds. By enhancing this remaining habitat (weed treatment) and restoring areas between the remaining habitats, anthropogenic disturbance and edge effect will be reduced. This will enhance the quality of wildlife habitat.

4. Consider multiple timeframes

The restoration planting can have long- and short-term successional endpoints. For example, in the long run (greater than 30-80 years) some areas planted to mixed riparian forest will convert to oak woodland. In the meantime, the fast growing, but relatively short-lived plants (willows, coyote brush) will provide important habitat to

threatened and endangered species (i.e. structure, cover, etc), while eventually the more shade-tolerant oaks will replace the more short-lived plants.

5. Develop a conceptual plan based on multiple management objectives

The planting associations are intended to provide a diversity of high quality habitat for targeted wildlife and reduce competition from invasive non-native species. They are intended not to interfere with or exclude any of the potential future recreational and community educational opportunities identified in the Conceptual Ball Ranch Master Development Plan or the San Joaquin River Parkway Master Plan. Finally, they are intended to complement ongoing riparian restoration efforts within the San Joaquin River Parkway.

6. Use an adaptive management approach for implementation of the project.

River Partners recommends an adaptive management approach (River Partners 2008) to provide a framework to evaluate project progress and respond to new information. These practices have resulted in high plant survival rates, accelerated natural recruitment of native species (through changes in microclimate and presence of seed sources), and documented wildlife benefits in short periods of time (three years).

V. RESTORATION POTENTIAL

A. Ecological Benefits

Bird species expected to benefit from the restored habitat include multiple federally and state listed species such as the yellow-billed cuckoo, least Bell's vireo, Swainson's hawk. Enhancing vegetative cover and the moist microclimate necessary for invertebrates and herbaceous vegetation will create the niche that riparian obligate nesting bird species like the least Bell's vireo require. Adjacent uplands used by resident and migratory wildlife will also experience increased population levels with the increased diversity of floral species within a native grassland and oak woodland which may be used by the federally and state-listed San Joaquin kit fox and California tiger salamander by providing potential foraging and breeding habitat. Frequently inundated floodplains may provide abundant food resources and rearing habitat for juvenile Chinook salmon.

B. Design Considerations

The Ball Ranch and Willow Unit conceptual restoration design will have four distinct components: enhancement of existing remnant riparian forests, restoration of native vegetation communities, enhancement of wetland function, and an increase in frequently inundated floodplains for the rearing of juvenile Chinook salmon. Within the narrow band of remnant riparian forest, vegetation is variably dense to sparse, and in some places it is currently being supplanted by invasive species. Desirable riparian vegetation can be established in areas where non-native vegetation will be removed, and in areas where natural regeneration is lacking. This could consist of tree, shrub, or grassland species, depending on the location and extent of surrounding vegetation.

Grading and revegetation of existing wetlands could improve their function by decreasing invasive nonnative vegetation, increasing wildlife habitat value, and improving aesthetic value for the local community. Increasing the extent and timing of inundated floodplains could improve the rearing habitat of Central Valley spring-run Chinook salmon.

This site-specific planting design represents a synthesis of project objectives and site assessment. Based on the available information, the most influential factors on the design are:

- Depth to groundwater for riparian areas,
- Existing remnant riparian and oak woodland vegetation,
- The potential presence of riparian obligate and arid grassland wildlife, and
- The potential future public use portions of the Project area.

Table 7. Design Considerations for Habitat Restoration at Ball Ranch and the Willow Unit, Fresno County, California.

Objective/Factor	Design Considerations
Comprehensive Objectives	
Provide immediate (< 3 years) and long term habitat benefits	<p>Lower terrace: Mimic and supplement early successional riparian habitat (fast growing dense riparian forest) that typically follows large flood events. Plan for succession of slower growing species that mature into high canopy riparian forest, or replace senescent sycamores, willows and cottonwoods.</p> <p>Upper terrace: Provide rapid establishment of a mosaic of native grasses with patches of shrubby vegetation. Maintain native broadleaf herbaceous species currently on site.</p>
Provide habitat benefits that are compatible with frequent passive recreation	Minimize disturbance during critical life stages for target wildlife species. For example, limit tree trimming for trail maintenance in the riparian areas to the bird non-breeding season (September – February) to reduce potential nest destruction.
Design habitat that will not interfere with or exclude potential future recreational opportunities	Ensure that habitat design and objectives do not exclude future development of a trail system, parking lot, vistas, and restrooms identified in the Conceptual Ball Ranch Master Development Plan.
Maintain general flood flow conveyance patterns and capacities	Orientation of planting rows will be parallel with the flow of flood waters.
Wildlife Objectives	
Maintain high plant species and vegetative structural diversity	Vary density across the site to allow light gaps and create structural differences (grouping trees together will create pockets of shade and light gaps), create vegetation patches (grouping small shrubs together will mimic larger plants and may attract desirable wildlife species faster than if they were grown apart), and install herbaceous plantings in the understory.
Improve habitat for Yellow-billed Cuckoo	Restore large tracts of suitable habitat. Promote large scale riparian habitat restoration.

Objective/Factor	Design Considerations
Improve habitat for Least Bell's Vireo	Promote dense vegetation with low stature such as mule fat and various willow species. An understory of mugwort, gumplant and other herbaceous perennials are preferential to non-native annual grasses and annual weeds.
Improve habitat for Swainson's hawk	Protect mature native riparian trees. Restore riparian forests that will eventually increase potential nesting habitat. Control non-native invasive plants and restore native grasslands to improve foraging habitat.
Improve habitat for San Joaquin kit fox	Provide patches of dense coverage of grasses and shrubs in the upper terrace to promote denning. Activities which promote rodent populations will support San Joaquin kit fox populations.
Improve habitat for California tiger salamander	Minimize soil disturbance that may impact ground burrows within upper terrace areas away from flooding. Restore native grasslands to improve habitat for ground squirrels and other burrowing small mammals. Protect existing wetland features, and decrease slope on edges to enable access and prevent trapping.
Improve habitat for Central Valley spring-run Chinook salmon	Increase areas of frequently inundated floodplain in order to provide ideal rearing conditions for juvenile salmon. Potentially manage water levels in existing basins which connect directly to the river as rearing habitat for hatchery-raised juvenile salmon.
Improve habitat for pallid bat	Control non-native invasive plants and restore native grasslands to improve foraging habitat.
Improve habitat for western mastiff bat	Control non-native invasive plants and restore native grasslands to improve foraging habitat.
Improve habitat for tricolored blackbirds	Contour wetland slopes to a shallower grade in order to increase suitable space for emergent marsh vegetation.
Improve habitat for yellow-headed blackbirds	Contour pond slopes to a shallower grade in order to increase suitable space for emergent marsh vegetation.
Improve habitat for western spadefoot toad	Control non-native invasive plants and restore native grasslands to improve foraging habitat while maintaining varying depths of the wetlands in order to provide shallow pools during variable water years.
Improve habitat for neotropical songbirds.	Vary planting density across the riparian restoration areas to allow light gaps and create structural differences (create cover and open areas for bird species), create vegetation patches (grouping small shrubs together will mimic larger plants and may attract desirable species faster than if they were grown apart).

C. Proposed Plant Communities

The proposed plant communities for this project are based on the vegetation communities described by Holland (1986). The plants listed in a vegetation community type are closely tied to a common set of soil and hydrologic factors. Based on the site assessment, the Project area can support a variety of Mixed Riparian Forest, Oak Riparian Forest, Marsh, and Native Grassland communities (Figure 28). Existing native species on site should be preserved wherever possible. Native perennial herbaceous

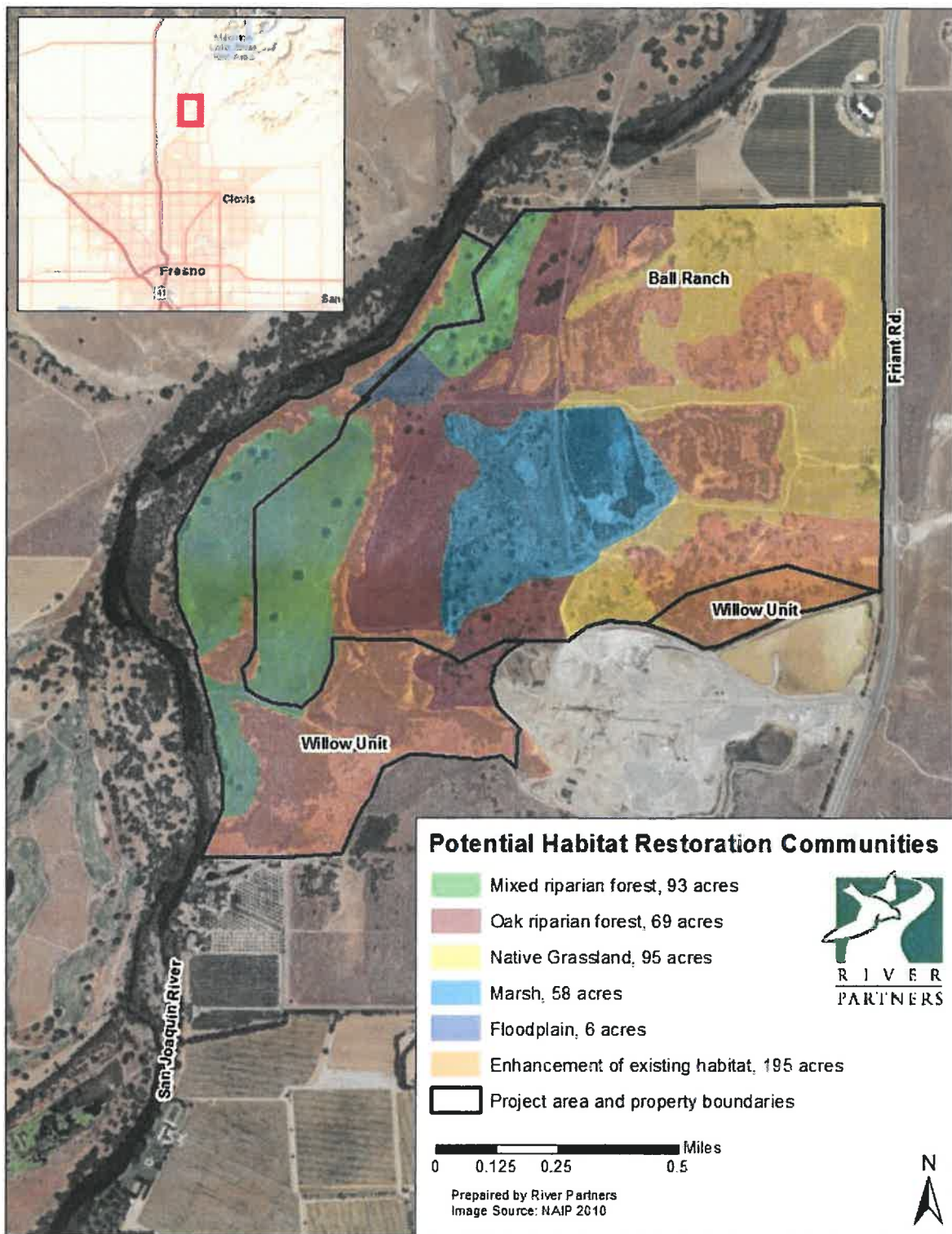


Figure 28. Potential Habitat Restoration Communities at Ball Ranch and the Willow Unit, Fresno County, California.

plants found scattered throughout the project area that can be considered for collection and seeding to compete with invasive weeds include: mugwort (*Artemisia douglasiana*), gumplant (*Grindelia camporum*), evening primrose (*Oenothera biennis*), and telegraph weed (*Heterotheca grandiflora*). Other annual natives that seem to be thriving on site and should be managed for natural seed dispersal include: doveweed (*Eremocarpus setigerus*), vinegar weed (*Trichostema lanceolatum*), fiddleneck (*Amsinckia intermedia*), common tarweed (*Centromadia pungens*), common sunflower (*Helianthus annuus*), and heliotrope (*Heliotropium curvassicum*). In the case of these species, the cost and effort of active restoration is not necessary for their continued presence at the Project area.

For the purpose of this Conceptual Design the targeted plant communities are defined based on broad descriptions. Prior to actual restoration work, the communities listed herein will be broken down into smaller subsets of the entire community as defined by Sawyer and Keeler-Wolf (1995), which will be called plant associations. For example, the Mixed Riparian Forest community could be subdivided into multiple related associations with differing plant design depending on site characteristics and management goals such as an arroyo willow thicket association that promotes nesting habitat for least Bell's vireo. More refined plant associations allow for more site-specific objectives to be reached, and better matches between plant species and local soil and hydrology information.

1. Great Valley Mixed Riparian Forest

Great Valley Mixed Riparian Forest occurs in remnant stands surrounding Little Dry Creek as well as all of the ponds and wetlands. Regeneration of native vegetation is greatest around the ponds. These areas experience the highest water table and the most surface water fluctuation which is critical for the natural establishment of riparian vegetation. Historical aerial imagery shows that Great Valley Mixed Riparian Forest was denser around the wetlands, however, current conditions include large amounts of die-off most likely caused by recent wildfires and limited precipitation due to the current five-year historic drought.

The lower floodplain terrace between the San Joaquin River and gravel plant intake canal is suited for restoration of this community type. Planting target trees and shrubs is the primary objective for this community type, however, establishment and management of understory grasses and herbs is also critical to success. The following table lists the overstory and understory species that may be used in restoration of this community type. It is not designed to be a comprehensive list of all species that may be used for restoration, but to provide suggestions for species trials. In the absence of flooding or other natural disturbance, regeneration will not occur naturally in this area. Restoration plantings should be designed to promote community succession from fast-growing willows and cottonwoods toward a sycamore-, valley oak-dominated stand in later years.

Table 8. Species composition for Great Valley Mixed Riparian Forest community at the Ball Ranch and Willow Unit, Fresno County, California.

Overstory		Understory
Overstory composition	Recommended density: 227 (16' x 12') plants per acre	Drought-tolerant
8%	Valley oak (<i>Quercus lobata</i>)	Milkweed (<i>Asclepias fascicularis</i>)
6%	Western Sycamore (<i>Platanus racemosa</i>)	Coyote melon (<i>Cucurbita palmate</i>)
8%	Fremont's cottonwood (<i>Populus fremontii</i>)	California brome (<i>Bromus carinatus</i>)
5%	Black willow (<i>Salix gooddingii</i>)	Spikeweed (<i>Centromadia pungens</i>)
3%	Red willow (<i>Salix laevigata</i>)	Saltgrass (<i>Distichlis spicata</i>)
10%	Arroyo willow (<i>Salix lasiolepis</i>)	Deergrass (<i>Muhlenbergia rigens</i>)
4%	Oregon ash (<i>Fraxinus latifolius</i>)	Yellow monkey flower (<i>Mimulus guttatus</i>)
6%	Mulefat (<i>Baccharis salicifolia</i>)	Jimsonweed (<i>Datura wrightii</i>)
8%	Quailbush (<i>Atriplex lentiformis</i>)	Gumplant (<i>Grindelia camporum</i>)
8%	California rose (<i>Rosa californica</i>)	Telegraph weed (<i>Heterotheca grandiflora</i>)
8%	California blackberry (<i>Rubus ursinus</i>)	Purple needlegrass (<i>Stipa pulchra</i>)
10%	Blue elderberry (<i>Sambucus mexicanus</i>)	Dove weed (<i>Croton setiger</i>)
8%	Buttonbush (<i>Cephalanthus occidentalis</i>)	Evening primrose (<i>Oenothera elata</i>)
8%	Coyote brush (<i>Baccharis pilularis</i>)	California poppy (<i>Eschscholzia californica</i>)
		Requires irrigation
		Mugwort (<i>Artemisia douglasiana</i>)
		*Santa Barbara sedge (<i>Carex barbarae</i>)
		*Goldenrod (<i>Euthamia occidentalis</i>)
		Creeping wildrye (<i>Elymus triticoides</i>)
		California melic (<i>Melica imperfecta</i>)
		One-sided bluegrass (<i>Poa secunda</i>)

*requires much irrigation – reserve for use in particularly wet or shady areas

2. Valley Oak Woodland

Valley Oak Woodland occurs as a narrow band along the intake canal and as small clusters within the lower floodplain terrace. Fire suppression, cattle grazing, and non-native annual grasses are most likely responsible for the lack of oak regeneration. Enhancement of the remnant patches could include weed control as well as planting and managing of a native understory of grasses and forbs. Areas targeted for restoration of Valley Oak Woodlands are locations on the lower floodplain terrace which has a slightly deeper water table compared to areas closer to the river. Planting target drought tolerant shrubs and valley oak trees is the primary objective for this community

type, however the establishment and management of a native understory of grasses and herbs is also critical to success. The following table lists the overstory and understory species that may be used in restoration of this community type.

Table 9. Species composition for Valley Oak Woodland at Ball Ranch and the Willow Unit, Fresno County, California.

Overstory		Understory
Overstory composition	Recommended density: 227 (16' x 12') plants per acre	Drought-tolerant
15%	Valley oak (<i>Quercus lobate</i>)	Purple needlegrass (<i>Stipa pulchra</i>)
10%	Western sycamore (<i>Platanus racemosa</i>)	Milkweed (<i>Asclepias fascicularis</i>)
12%	Quailbush (<i>Atriplex lentiformis</i>)	California brome (<i>Bromus carinatus</i>)
13%	Coyote brush (<i>Baccharis pilularis</i>)	Spikeweed (<i>Centromadia pungens</i>)
7%	Mulefat (<i>Baccharis salicifolia</i>)	Gumplant (<i>Grindelia camporum</i>)
5%	Buttonbush (<i>Cephalanthus occidentalis</i>)	Telegraph weed (<i>Heterotheca grandiflora</i>)
30%	Blue elderberry (<i>Sambucus mexicanus</i>)	Lupine (<i>Lupinus bicolor</i>)
8%	California rose (<i>Rosa californica</i>)	Evening primrose (<i>Oenothera elata</i>)
		Requires irrigation
		Mugwort (<i>Artemisia douglasiana</i>)
		Creeping wildrye (<i>Elymus triticoides</i>)
		California melic (<i>Melica imperfecta</i>)
		One-sided bluegrass (<i>Poa secunda</i>)

3. Valley Needle Grassland

The restoration of Valley Needle Grassland is an important component to the conceptual restoration design for Ball Ranch and the Willow Unit because of the proximity of listed fauna which utilized native grasslands and the threats of non-native invasive species including yellow star thistle, wild oats, ripgut brome, and soft chess. These weeds tend to out-compete native species and form monotypic stands with little value as wildlife habitat. Weed control and management activities during the restoration process will prevent these invasive species from re-establishing in the grasslands.

Seeding a dense and species-diverse grassland is the primary objective for this community type, as native grasses enhance wildlife habitat and reduce hazardous fire conditions. Table 10 lists the seeding rates for native grasses which should be planted with a no-till drill in November or December for the first rains. It also lists species which should be planted as plugs. Plugs are an especially important method for cultivating plants that do not reproduce well by seed. The following list is not designed to be a comprehensive list of all species that may be used for restoration, but to provide suggestions for species trials.

Table 10. Species composition for Valley Needle Grassland at Ball Ranch and the Willow Unit, Fresno County, California.

Seeding Rate (PLS)	Grassland seeds	Grassland plugs	Planting Density (plugs per acre)
3	Blue wildrye (<i>Elymus glaucus</i>)	Deergrass (<i>Muhlenbergia rigens</i>)	435
4	Purple needlegrass (<i>Stipa pulchra</i>)	Saltgrass (<i>Distichlis spicata</i>)	435
3	One sided bluegrass (<i>Poa secunda</i>)		

D. Potential Marsh Enhancement Planning Activities

The proposed marsh enhancement activities for the Project area are intended to improve potential breeding habitat for the Federally and State threatened California tiger salamander and State species of special concern western spadefoot toad, tricolored blackbird, and yellow-headed blackbird. Additionally, enhancement activities would help manage non-native species and restore native vegetation within the wetlands. These actions would also improve the aesthetic value of the current wetland areas and potential access to the ponds for recreational activities. Potential restoration activities could include non-native invasive species control, contouring of existing wetlands, adding soil amendments, and active vegetative restoration.

All of the ponds and marshes within the project area are relics of previous mining activities, having been passively revegetated from old borrow pits. Because the dominant water source of the marshes is ground water and precipitation (Escobar 2012), they are considered depressional wetlands (NRCS 2008). However, unlike most natural wetlands, they have relatively steep slopes (Figure 29) which has only allowed a narrow ring of hydrophytic vegetation to become established around the water's edge. Currently, the depths and sizes of the ponds and wetlands vary. This variability causes the wetlands to have seasonal and temporal differences in size and depth as compared to one another. In wetter years, such as 2011, more wetlands held water throughout the year as compared to drier years such as 2015 (Figure 15).

Both the California tiger salamander and western spadefoot toad require seasonal flooded pools for breeding (Stebbins 2003). The ponds within the Project area that hold water year round, are not suitable breeding habitat for either species because they maintain a population of non-native bass and/or bullfrogs. Both bass and bullfrogs are voracious predators of amphibians, and particularly their larvae and tadpoles. Other wetlands on-site that periodically dry out will exclude both bass and bullfrogs from utilizing potential breeding habitat. Because suitable habitat for these species will vary depending on the water year, we recommend conducting a hydraulic analysis to determine how best to alter the shape of the wetlands to maximize suitable habitat. However, grading the side slopes of the wetlands to a more gradual grade would maximize the extent of shallow wetland habitat which could be utilized by both the California tiger salamander and western spadefoot toad, should they colonize the site. Shallower slopes would also increase the suitable area for emergent marsh vegetation which would provide potential breeding habitat for the both tricolored and yellow-headed

blackbirds. Many experts recommend that bank slopes for restored or enhanced wetlands be contoured at a slope of 15:1 or greater (Kentula et al 1992). More recent publications suggest even more gradual slopes such as 20:1 or greater (NRCS 2008).



Figure 29. Typical Wetland with Steep Slopes at the Ball Ranch and Willow Unit, Fresno County, California.

Shallow slopes would allow the establishment of wider expanse of wetland vegetation as opposed to a narrow ring. NRCS (2008) recommends that a mix of native grasses, forbs, and sedges be seeded along contoured wetland slopes in order to create a diverse herbaceous canopy with interstitial spaces that are conducive to the movement of amphibians. Before specific grading recommendation or plans could be made, additional data must be collected which is beyond the scope of this document. Data collection and analysis should include the following:

- **Detailed Soils Analysis** – Soils within the wetland areas have been previously disturbed due to mining activities and may not be correctly portrayed by the NRCS Web Soil Series. Tests should be performed to determine soil type, texture, hydraulic conductivity, nutrient analyses, and salinity.

- **Detailed Hydraulic Analysis** – As the wetlands are directly affected by the depth to ground water, and capture of local precipitation, data should be collected to evaluate potential wetland water levels in varying water years. Data should be modeled in order to evaluate whether the target wetlands provide the hydroperiod and hydrologic regime that is required for breeding California tiger salamander and western spadefoot toad over a suite of water years.
- **Detailed Topographic Analysis** – Current surface topography needs to be evaluated in order to design construction alternatives which ensure that no existing roads, utilities, planned public infrastructure, or cultural resources are affected by the designed grading activities.

A more detailed description of the planning process can be found in the NRCS, Wetland Restoration, Enhancement, or Creation field guide (2008).

E. Proposed Floodplain Enhancement Activities

Ball Ranch and the Willow Unit offer a unique opportunity to improve floodplain rearing habitat for juvenile Central Valley spring-run Chinook salmon, which would directly support the San Joaquin River Restoration Program's effort to restore this species in the San Joaquin River. Seasonally inundated floodplains have been shown to provide the best growing conditions for juvenile Chinook salmon (Jeffries et al 2008) and have also been identified in the Chinook salmon recovery plan as an essential habitat element for their recovery (NMFS 2014). Seasonally inundated floodplains can provide ample phytoplankton and algae production (Ahearn et al 2006), which in turn supports an abundance of zooplankton that juvenile salmon feed upon. Opportunities for seasonally inundated floodplain restoration exist at the Project area, specifically at the old worm farm (Figure 28). In this area, we have identified two potential floodplain creation and management strategies.

1. Salmon rearing detention basins

The old worm farm is a collection of approximately 4-5 foot deep basins, interconnected with concrete checks designed to convey water between basins and eventually drain directly to the river. With minor modifications to the floor of the basins and the check system to ensure positive drainage, the old worm farm could be redesigned as manually flooded rearing habitat for salmon. By utilizing the river pump, the basins could be flooded with San Joaquin River water and maintained as rearing habitat for juvenile salmon transported by tanker trucks from the local hatchery. Using this system, seasonal floodplain habitat could be created and managed to provide ideal growing conditions even in non-flood years. The basins could be planted with native grasses and forbs that are adapted to frequent flooding such as creeping wildrye and mugwort.

Similar efforts have already been underway on the Sacramento River and further downstream on the San Joaquin River. Cal Trout, the UC Davis Center for Watershed Science, and the Department of Water Resources have been rearing juvenile salmon on agricultural fields since 2012 as part of the *Knaggs Ranch Experimental Agricultural Floodplain Habitat Investigation* which assesses the growth rates of juvenile salmon within flooded agricultural floodplains compared to juveniles in the main stem of the river

channel. Through this project, tens of thousands of juvenile salmon have been reared in rice fields which are designed in the same layout as the worm farm--basins which are interconnected by water checks which eventually drain into the river.

The Knaggs Ranch Project demonstrated that salmon reared on the floodplain grew 700% faster than salmon in the river and that zooplankton which juvenile salmon feed on was 14,900% greater per cubic meter of floodplain as compared to the river (CalTrout 2016). Research shows that salmon reared on floodplains have higher rates of growth and ultimately lead to a higher rate of survival as they migrate to the ocean (Sommer et al 2001). Not only could the flooded detention basins provide superior rearing habitat for juvenile salmon, a cost analysis could be performed to evaluate the cost effectiveness of raising salmon as compared to maintaining juveniles in the hatchery.

2. Excavated frequently inundated floodplain

If manual flooding and management of the detention basins is not an option, the walls of the basins could be degraded and the topography could be graded down to an ecologically significant height in which an area of floodplain would become inundated more frequently by river flows and water releases. Similar projects are underway on the San Joaquin and Cosumnes rivers in which retired agricultural fields are or will be reconnected to the floodplain through excavation and grading (Ahearn et al 2006, CBEC 2016). In order for the floodplain to be ecologically significant for Chinook salmon, it would need to be graded down to an elevation which would be inundated for a minimum of three weeks between the months of January and May, when juvenile salmon are typically rearing (Merz et al 2013). This duration allows sufficient time for phytoplankton and subsequent food-web development needed for juvenile salmon to feed. Additionally, the floodplain should be at an elevation which inundates at least one out of every three years in order to ensure rearing habitat is available within the typical life cycle of Chinook salmon. The floodplain could be planted with native grasses and forbs that are adapted to frequent flooding such as creeping wildrye and mugwort.

In order to design an excavated floodplain, a hydraulic analysis would need to be completed to provide technical engineering design and evaluation. The analysis would need to model historical river flows at the project area in order to determine the elevation which would inundate during the rearing season, for the desired duration, and the desired frequency. This approach requires heavy inputs upfront as compared to manually flooding the detention basin, but would require minimal management over time.

VI. RESTORATION DESIGN

Riparian areas are critically important habitats that harbor a disproportionately high number of wildlife species and perform a greater number of ecological functions compared to most upland habitats. Riparian corridors connect all other habitats and are likely the single most important wildlife corridor in California.

As stated earlier in this document, the quality of the corridor habitat is not only dependent on the width of the corridor, but also the length, connectivity to larger patches of habitat, isolation from other quality habitat, and surrounding land use. Our restoration recommendations are based on habitat requirements currently known for the target wildlife species and an in-depth site evaluation. General recommendations for restoring the riparian corridor on Ball Ranch and the Willow Unit:

- Continuous corridors are better than fragmented corridors.
- Wider corridors are better than narrow corridors.
- Structurally diverse corridors are better than corridors with little structural diversity.
- Diverse native grasslands provide better habitat than non-native annual grasslands.

A. Restoration Priorities

Limited resources make prioritization of restoration important. Several factors influence the priorities for restoration of the Ball Ranch and the Willow Unit, and most are typically geographical in scope, revolve around permitting needs, or are based on implementation costs. They include:

- Proximity to remnant riparian habitat;
- Security of water supply, matching irrigation demands to restoration plans while minimizing irrigation costs;
- Amount of resources and time needed to permit restoration actions;
- Ensuring the conceptual restoration design does not interfere any of the potential recreation and outdoor education objectives as outlined in the Conceptual Ball Ranch Master Development Plan or the San Joaquin River Parkway Master Plan; and,
- Ensuring restoration activities can be demonstrably successful and are not cost prohibitive.

Riparian restoration efforts have been ongoing within the San Joaquin River Parkway and future plantings should build off of lessons learned as well as tie into remnant communities. Effort should be taken to review management activities of older plantings to learn about management strategies which will benefit nearby planting efforts more so than geographically disjointed efforts.

Riparian communities targeted in this Analysis require irrigation for establishment (3-5 years). Two water supplies exist on the Project area (i.e. pond and river), however either source would require the installation of a new pump as well as a reconnection to the existing electrical lines. Restoration planning must proceed with consideration of

water supply rights, availability, and cost efficiency in pumping, piping, and other irrigation infrastructure. Phasing of the restoration will be necessary to overcome this limitation.

Some of the potential restoration areas may eventually become open to public use, so priority also needs to be placed on specific restoration objectives with respect to recreation. Maintenance of access roads, the protection of historical landmarks, and potential structures (e.g. parking lot, toilets, viewing decks) identified in the Conceptual Ball Ranch Master Development Plan are significant and could guide the establishment of priorities for restoration. Table 11 shows the prioritization of each potential action for wildlife benefits, permitting, recreation potential, and long-term maintenance costs. Each factor was ranked from 1 to 5, with 1 having the least benefit and 5 having the greatest. Each potential restoration activity's rank was then totaled in order to produce an overall benefit score to help prioritize potential activities.

Table 11. Prioritization of Potential Restoration Actions at Ball Ranch and the Willow Unit, Fresno County, California.

Potential Restoration Actions	Wildlife Benefit*	Least Permitting Costs and Efforts	Lowest Long-term Management Costs	Overall Score
Mixed Riparian Forest	5	4	5	14
Oak Riparian Forest	4	5	4	13
Native Grasslands	3	3	2	8
Marsh Enhancement	2	1	3	7
Floodplain Enhancement	1	2	1	4

*Based on the number of Threatened and Endangered species that could benefit from this habitat type.

B. Restoration Design

This Analysis combines site investigations of hydrology, prior land use, disturbance regimes, soils, current and historic vegetation patterns, current and historic wildlife communities, and recreation and educational objectives of the San Joaquin River Conservancy to provide a comprehensive strategy for habitat restoration. Potential obstacles were identified and are presented in the implementation section below. Successful restoration of habitats at Ball Ranch and the Willow Unit will require additional efforts in funding, planning, and coordination amongst conservation organizations, agency personnel, California Department of Fish and Wildlife and the San Joaquin River Conservancy.

Restoring a riparian corridor on the lower floodplain terrace of the Project area would provide 162 acres of new habitat for a suite of threatened riparian-dependent species. Promotion of species habitat should be done in concert with responsible management

of public access which could include occasional supervised educational and interpretive uses.

Restoring and enhancing a native grassland community on the upper terrace would provide 95 acres of new habitat and offer a unique opportunity to promote conservation of an ecosystem that is less-sensitive to the impacts of passive recreation, and could provide the opportunity for future development of a multiuse trail system, parking areas, and restrooms.

Restoring and enhancing 58 acres of ponds and marshes would improve habitat for multiple target species while also increasing and improving the safety of potential public fishing access to the main pond.

Enhancing six acres of floodplain could benefit thousands of juvenile Chinook salmon per year.

Enhancing 194 acres existing riparian and oak woodland habitat would improve understory and mid-canopy structure which provide valuable wildlife habitat. Additionally, weed control efforts would minimize the spread of non-native species throughout the project area, which would complement any active restoration activities.

C. Restoration Benefits

1. Conservation ecology

A number of threatened and endangered species stand to benefit greatly from restoration proposed in this Analysis. The habitat types targeted for restoration (generally riparian forest, oak woodland, and native grassland) have been restricted in their extent by land conversion, water diversion and irrigation. They support communities of threatened wildlife species who synergistically benefit from aptly designed restoration plantings. The conceptual restoration design presented here includes considerations for 13 special status wildlife species, and may provide additional benefits non-target residential and migratory wildlife (See Section 3).

2. Climate change

Restoration of the riparian corridor and native grasslands of the Project area will enhance a migratory corridor for wildlife that will become even more critical as global temperatures continue to rise. Additionally, tree growth sequesters carbon, leading to reductions in atmospheric carbon dioxide, a greenhouse gas. River Partners has been working with the US Fish and Wildlife Service and Winrock International to determine rates of carbon sequestration for planted riparian tree species (Pearson et.al. 2008). The carbon offset from restoration may be leveraged to gain additional funds for restoration in the form of carbon credit sales or revenues.

3. Regional conservation efforts

The Project area sits within several conservation planning areas illustrating its value both to people and to wildlife. It is within the San Joaquin River Parkway, a planned

greenbelt along the San Joaquin River from the Friant Dam down to Highway 99. The river provides an important habitat corridor for wildlife moving across the region towards the foothills of the Sierra Nevada. It is a significant habitat component of the Fresno County Climate Change Adaptation Plan (Koopman et al 2011) and its restoration would be consistent with the resource protection policies of the Fresno County General Plan. It is also included in the Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998) and the PG&E San Joaquin Valley Operation and Maintenance Habitat Conservation Plan (Jones & Stokes 2007). It encompasses an oak tree restoration project completed by Tree Fresno. Restoration of habitats at Ball Ranch and the Willow Unit will benefit these regional efforts by expanding on restoration and parkway projects and providing enhanced habitat linkages for wildlife.

4. Recreation and education

Ball Ranch has the potential for low impact outdoor recreation for area residents. It provides a potential link for the multi-use trail from Lost Lake Regional Park to Woodward Park as identified in the San Joaquin River Parkway Master Plan. Restoration of habitats within the Project area could enhance residents' connection with the river by providing greater diversity of plant and wildlife species and improvement of future trail conditions (shade). Restoration would bolster wildlife populations making photography and wildlife viewing even more rewarding.

Potential educational opportunities at Ball Ranch would be greatly improved through implementation of proposed restoration activities within this Analysis. School age children, volunteers, and college students could actively participate in implementation and monitoring activities. Field trips to the Project area would be more fulfilling due to the enhancement of the currently degraded natural communities.

VII. PROJECT IMPLEMENTATION

Ideal implementation of restoration would be rapid and large scale. Rapid, large scale projects benefit from economies of scale in that costs to mobilize, permit, and plan are expended once as opposed to many times. Rapid and large scale projects benefit wildlife populations by creating large blocks of contiguous habitat faster than piecemeal, smaller efforts. The response of wildlife, especially riparian songbirds, to large scale restoration has been documented by Point Reyes Bird Observatory Conservation Science over years of restoration monitoring on the Sacramento and San Joaquin Rivers (Gardali et.al. 2005). They report incredible species response within just one to two years of restoration. Large scale implementation, however requires large amounts of capital at once, and suffers from limited ability to learn from previous mistakes. The realities of water management, permitting, current land uses and funding opportunities at Ball Ranch and the Willow Unit demand that restoration be undertaken in several stages. Larger, more comprehensive restoration projects are preferred to small ones; however all restoration efforts guided by this Analysis will be beneficial to wildlife and people. Implementation strategies identified for this Habitat Opportunities Analysis are provided below.

A. Permitting

Restoration of wildlife habitats is generally exempt from the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA) under standard or categorical exemptions related to minor disturbances and beneficial uses. The proposed restoration involves a wide area and a number of project elements that may trigger CEQA or NEPA review/initial studies/negative declarations, prior to discretionary approval of the project or its funding.

Restoration work done within the active stream channel or along other Jurisdictional Waters of the U.S. (e.g. ponds and wetlands) is subject to review by the US Army Corps of Engineers under Section 404 of the Clean Water Act (CWA), and the Regional Water Quality Control Board under Section 401 of the CWA. Generally restoration actions are allowed without permits so long as they do not impact (directly or indirectly) Waters of the U.S. or Waters of the State. However, if contouring is performed along wetland or pond edges, impacts would occur.

Restoration work done within the banks of the river, or within remnant riparian areas is subject to review by the California Department of Fish and Wildlife under Section 1600 of the Fish and Wildlife Code. Generally, restoration actions are allowed so long as they do not negatively impact the existing high-quality habitat. A 1600 agreement may be required for any streambed alteration, however the agreement's requirements may be less rigorous if there are no negative impacts on existing habitat.

Restoration work done within the designated floodway requires concurrence with the Central Valley Flood Protection Board, and likely an encroachment permit. Portions of Ball Ranch and the Willow Unit are located within the designated floodway (Figure 16) and an encroachment permit is necessary for plantings in this area. Plantings done

within the designated floodway must be demonstrated to the Flood Board to cause no impediment to the conveyance of flood flows across the site. Alternative planting designs, species selection and planting densities would be reviewed by a civil engineer to determine the effects of restoration work on flood conveyance. Researchers at UC Davis have studied the effects of some native riparian species on flood flows in an experimental flume. They have found that certain species (specifically California blackberry, California rose, and sandbar willow) provide no impediment to flood conveyance under high velocities (Kavvas et.al. 2009). Additionally, plantings that run parallel to flood flows and plantings that maintain a low plant density have less likelihood of obstruction flood flows. Detailed plans would be written to accommodate flood flows in the designated floodway.

Any activities that may impact federal or state protected species or their habitats must go through consultation with US Fish and Wildlife Service, and/or CDFW. The San Joaquin River Restoration Program is working to restore Chinook salmon within the river and restoration activities may require concurrence from the National Marines Fisheries Service.

B. Site Specific Planting Plans

Site specific planting plans should be prepared for the individual projects that contribute toward restoration of the Project area. Site specific planting plans will require a review of soil, hydrology, and vegetation data, especially if the current drought conditions continue. Restoration design and planning would need to be included in the scopes of work and budgets for future restoration activities and improvements on Ball Ranch and the Willow Unit. A site-specific planting plan should include the following pieces of information: goals, planning considerations (ecological, permitting, target wildlife species, implementation challenges), project area, planting layout, scheduled plant establishment activities, adaptive management approach, monitoring plan, reporting requirements, and post-project maintenance. Table 12 summarizes the components of a restoration plan.

C. Site Preparation

Various site preparation tasks are necessary for restoration on a typical site. The entire planting site should be disked to bury the weed mulch. Even though most preparation techniques only disturb to top twelve inches of soil, River Partners recommends that a qualified professional archeologist conduct a cultural resource investigation prior to any ground-disturbing activities.

If it is determined that ground disturbance could affect California tiger salamanders in the upland areas, site preparation should be limited to mowing and raking of the thatch in order to avoid any negative effects on active burrows.

Table 12. Components of a Typical Restoration Plan.

Restoration Plan Component and Description
Plant Design - The planting palette is defined for various target plant communities. The planting design includes field layouts showing the locations of various target plant communities throughout the project site, the species composition of each planting community (target percentage of species in each community), and the planting layout for each community. Understory seeding and planting is described for each community including the target seeding rate and species composition as well as propagule type and local source availability / collection capacity considerations for each species.
Plant Establishment Plan - Scheduled plant establishment recommendations include anticipated weed control and irrigation strategies depending upon current site conditions. Contingencies for unforeseen circumstances should be addressed.
Monitoring Plan - The monitoring plan includes sufficient detail to allow researchers to revisit the plantings and collect the necessary data to report significant performance metrics for the site. Typical performance metrics include species survivorship, species growth (canopy width and height), and absolute and relative cover of understory species. <ul style="list-style-type: none">• The monitoring plan may include surveys for target wildlife species that serve as indicators of ecosystem function (i.e. neotropical migratory songbirds and resident riparian-dependent bird species) or that are targeted by regional or local recovery plans (i.e. threatened or endangered species). Wildlife surveys are generally performed by qualified conservation organizations, endangered species recovery programs, or university researchers.
Timeline – A typical timeline for restoration is included as a basic guide in this plan. Target dates for site assessment, field preparation, irrigation installation, plant procurement, planting, plant establishment, and monitoring are presented (Table 15).

D. Irrigation Design

The layout of planting rows and irrigation system should be designed to allow flood flow conveyance to pass through the restoration site without raising water elevations while also accommodating equipment needs, such as the width of the mower that will control weeds in the aisles. All woody trees and shrubs should be planted in rows that will be oriented parallel to flood flows, roughly north to south. Planting rows should be spaced 16 feet apart, while plants within each row should be planted at 12 foot spacing. However, rows should be installed in a curvilinear design in order to prevent the mature plantings from looking like an orchard. Plants should be irrigated utilizing a drip irrigation system with inline emitters. Each plant should have three 0.5 gph emitters spaced at 18 inches in order to ensure an adequate wetted area for root establishment.

E. Plant Material Collection and Propagation

Native materials collected locally should be used for all habitat restoration at Ball Ranch and the Willow Unit. Native genotypes are adapted to local conditions and are more suited to the ecosystem at the Project area than generic nursery stock. Native planting material for many of the tree and shrub species can be collected on-site with minimal

impact to the remnant vegetation. Table 13 summarizes the recommended propagation method for many of the species in this conceptual restoration plan.

Table 13. Recommended Propagation and Planting Methods for Native Plant Material at Ball Ranch and the Willow Unit, Fresno County, California.

Species	Propagule source and recommended planting method
Mugwort (<i>Artemisia douglasiana</i>)	Preserve-collected seed or plugs, broadcast or planted
Milkweed (<i>Asclepias fascicularis</i>)	Preserve-collected seed, broadcast
Quailbush (<i>Atriplex lentiformis</i>)	Preserve-collected cuttings, seed grown out in containers
Coyote brush (<i>Baccharis pilularis</i>)	Preserve-collected seed, grown out in containers
Mulefat (<i>Baccharis salicifolia</i>)	Preserve-collected seed, grown out in containers
Spikeweed (<i>Centromadia pungens</i>)	Preserve-collected seed, broadcast
Buttonbush (<i>Cephalanthus occidentalis</i>)	Preserve-collected cuttings
Saltgrass (<i>Distichlis spicata</i>)	Preserve-collected plugs
Goldenrod (<i>Euthamia occidentalis</i>)	Preserve-collected seed, broadcast
Oregon ash (<i>Fraxinus latifolius</i>)	Preserve-collected seed, grown out in containers
Gumplant (<i>Grindelia camporum</i>)	Preserve-collected seed, broadcast
Evening primrose (<i>Oenothera elata</i>)	Preserve-collected seed, broadcast
Western sycamore (<i>Platanus racemosa</i>)	Preserve-collected live green cuttings, grown out in containers
Fremont's cottonwood (<i>Populus fremontii</i>)	Preserve-collected cuttings
Valley oak (<i>Quercus lobate</i>)	Locally collected seed, grown out in containers
California rose (<i>Rosa californica</i>)	Preserve-collected seed, grown out in containers
California blackberry (<i>Rubus ursinus</i>)	Preserve-collected seed, grown out in containers
Black willow (<i>Salix gooddingii</i>)	Preserve-collected cuttings
Red willow (<i>Salix laevigata</i>)	Preserve-collected cuttings
Arroyo willow (<i>Salix lasiolepis</i>)	Preserve-collected cuttings
Blue elderberry (<i>Sambucus mexicanus</i>)	Preserve-collected seed, grown out in containers

Plants should be installed with consideration of anticipated management. For example, weeds respond to localized moisture conditions (such as those around a drip emitter) and require weed control. Hand pulling of weeds around planted trees and shrubs is laborious and inefficient. Planting tree and shrub saplings or cuttings with a disposable protector (such as a milk carton) allows the use of localized herbicide application without damaging the plant. Mulch or the use of weed mat materials can be effective at minimizing weed growth around the drip emitters as well. Additionally, planting trees and shrubs with enough space between to drive a riding mower allows for efficient application of a repeated mowing regime which can be very effective against annual weeds, promoting the growth of desirable native perennials, or repeated herbicide applications which can be very effective against annual grasses while minimizing soil disturbance.

Understory plantings have been broken into two categories in this Analysis: drought tolerant and requires irrigation. Species that are drought tolerant may be seeded into the areas outside the influence of the drip irrigation system. They should be seeded onto a lightly tilled or raked planting bed to promote contact with mineral soil. Seeding should occur following the first rains to benefit from natural irrigation. Areas seeded should be treated with repeated mowing's or targeted herbicide applications to decrease competition with annual grasses and weeds. Species identified as requiring irrigation should be planted or seeded within the influence of drip emitters. This may require cutting holes in weed mats or mulching around desirable plants. Plants can also be protected with a milk carton to allow for herbicide application within this area. Considerations for efficient weed management with installation of understory plants are critical to success of understory plantings. It is expected that as trees and shrubs grow over time, their shade will promote favorable moisture conditions for the expansion of understory plantings into the spaces between plants, thus the diversity and spatial arrangement of plantings will not remain as planted for many years following restoration.

F. Maintenance

1. Irrigation

Because of the dry summers typical of the climate in the area, irrigation will be required. Irrigation will be applied with the goal that plants will become self-sufficient after the third growing season. Irrigation for the plantings should be designed with efficiency in cost and operation in mind. Drip emitters at each plant are efficient in water and power usage. Water could be pumped from the river or main pond. Pumps may be run on solar panels or draw from the PG&E power line crossing the Project area. Project-specific details of irrigation and power supply should be laid out in a site-specific planting plan.

In the first growing season, the rapidly growing seedlings have roots only in the surface (the top 1-2 feet) of the soil profile. The rooting zone must be kept moist through the season to ensure optimum growth and survival. On loam soils, a frequency of once every 7 days is sufficient; irrigation on sandy soils may need to be more frequent. The intervals between irrigations are dependent upon soil texture, depth to water table, the weather conditions, and plant water stress. Because a mixture of species with different water demands is proposed, the plants would be carefully observed to maintain a balance of soil moisture that is acceptable for xeric species like valley oak and elderberry as well as more mesic species like sandbar and red willow.

The strategy for the second and third year is to train the roots to grow deep toward the water table. Roots at depth (15-20 feet) may be able to tap into the water table on the site and out-compete more shallow-rooted weeds. Less frequent deep watering will encourage roots to grow deeper, well below the roots of the weeds, allowing the woody species exclusive use of available deep moisture. As the tree's roots grow deeper, the time between irrigations become longer, allowing the soil surface layers to dry, and thereby reducing weed vigor.

2. Weed control

Weed control is the largest challenge facing restoration practitioners today. Ball Ranch and the Willow Unit currently host several problematic weeds including sesbania, tree

tobacco, tree of heaven, tamarisk, eucalyptus, and yellow star thistle. River Partners and the San Joaquin River Parkway Conservation and Trust have spent thousands of hours treating weeds on the San Joaquin River, and have learned valuable lessons already.

Sesbania is present in the intake canal and sediment pond from the neighboring mining operation. It can form dense thickets in moist areas, effectively outcompeting all native vegetation. The most effective treatment is to cut and stump-treat with glyphosate or triclopyr. If the trees are small enough, they can be uprooted, however they are likely to return in the same location unless the roots are killed. If the tree has already set seed, care should be taken to remove and bag all of the seed for disposal in order to ensure that it isn't being spread by the act of removing it. The population of sesbania in the Parkway reach is believed to be the highest in the watershed, making its removal critical to control further infestations downstream. Since it has become established, on-going weed control will be necessary as a robust seed bed most likely exists. The most lasting management alternative for control of sesbania is to restore the banks and floodplains of the river with dense desirable native vegetation that outcompetes sesbania saplings and thwart their further establishment. As restoration activities lead to potential soil disturbance, monitors should be aware that sesbania may invade, and actions should be taken to reduce its success.

Tree tobacco is present in the remnant riparian vegetation at the Project area. Tree tobacco can be easily controlled with glyphosate herbicide applied to the green leaves and/or stems. Large trees should be removed mechanically, then stump-treated with herbicide. If herbicide is unavailable, trees can be uprooted, however they are likely to return in the same location unless the roots are killed. Tree tobacco is distributed in California's waterways, and will likely always be a management concern for Ball Ranch and the Willow Unit. The most lasting management alternative for control of tree tobacco is to restore the banks and floodplains of the river with dense desirable native vegetation that outcompetes tree tobacco seeds that may wash in from out of the area.

Tree of heaven is present in multiple dense groves across Ball Ranch. Tree of heaven is also distributed through drainage ways in California, and can be particularly problematic at higher elevations. This tree is an opportunist that thrives in sunlight and disturbed soils. It can produce an allelopathic chemical that inhibits the growth of other plants. Tree of heaven should be removed and stump-treated with glyphosate in late summer or early fall to increase effectiveness. Triclopyr applied to leaves of young plants has also proven to be effective. As restoration activities lead to potential soil disturbance, monitors should be aware that tree of heaven may invade, and actions should be taken to reduce its success.

Tamarisk was observed within and along the banks of Little Dry Creek. This species is aggressive, producing massive amounts of seed while also being able to propagate vegetatively. It has the ability to tolerate a wide range of environmental conditions and displace native woody species such as cottonwood and willows. The cut-stump

treatment using triclopyr or imazapyr is the most effective, however applying herbicide to the green foliage can also kill an individual plant.

Eucalyptus establishment is minimal and located near the entrance to Ball Ranch. Leaf litter from mature trees can impede colonization of native species, turning areas into monoculture stands. Cut stump treatment with glyphosate or triclopyr is most effective. However, larger trees which are unsafe to fell can be treated by cutting into the cambium layer around the diameter of the tree and immediately treating it with herbicide.

Yellow star thistle is common in dense stands at Ball Ranch and the Willow Unit throughout the non-native grasslands. Controlling the species requires multiple herbicide applications. Several herbicides are effective during the rosette stage such as 2,4-D, dicamba, and triclopyr. However, a single application is insufficient since the species has a long germination period. All of these herbicides are selective and do not harm grasses. Glyphosate can also be used to control actively growing plants, however it is a non-selective herbicide, so any other grasses or forbs will also be controlled.

3. Plant protectors

Plant protectors that protect young plants from herbicide spray can greatly enhance cost efficiencies by allowing for quick application of herbicides to recruiting weeds. Often misprinted milk cartons can be used for this purpose. Milk cartons should be stapled to a wooden stake and driven into the ground around a newly planted individual. The milk carton is fully biodegradable making collection and disposal unnecessary. Milk carton plant protectors provide little protection from large herbivores like cattle and deer. Approximately 4 inches of wood shavings can be applied as mulch around each plant to hold soil moisture and minimize weed growth.

4. Herbivore Control

Herbivores can have a large impact on young plants. A number of measures can help control or minimize their effects (Table 12). Cultural practices such as mowing or spraying can discourage most of these herbivores. One of the advantages of active restoration is that typically, more plants are planted than the herbivores can eat. Mortality of plants is expected to occur over time and is built into the planting design. Some damage by herbivores is tolerable and will not necessarily impact the success of the planting. Owl box installation could provide an outreach opportunity (local schools could build) and help to increase the local raptor population.

5. Grazing

If cattle grazing is continued at Ball Ranch, additional fencing will be required to prevent impacts during the restoration efforts within the leased area. A 3-wire barbed wire fence, following wildlife-friendly fencing guidelines, should be sufficient to protect the restoration site as it grows. It isn't necessary to completely enclose the area to be protected. Deer in small numbers are present in the area, but are not expected to have a significant impact on the plantings. Field densities allow for some minor browsing damage.

Table 14. Summary of herbivore control methods.

Herbivore	Type of Damage	Comment on measure(s) or plant response
Voles (<i>Microtus californicus</i>)	Eat bark and cambium at the base of sapling, usually girdling the entire stem.	Saplings resprout, unless vole population is high.
	Dig-up and eat recently planted acorns.	Voles live only in dense herbaceous (weed) cover and never stop moving when in the open to avoid predators. Remove dense weed cover through herbicides or mowing.
		Installation of raptor perches can encourage predation and keep vole populations under control.
Pocket Gophers (<i>Thomomys bottae</i>)	Eat root systems (probably killing more saplings than any other vertebrate pest).	Control of weed cover allows predators to hunt gophers. However, gophers can persist in an open, weed-free field. A variety of birds will prey on gophers if given the opportunity. Raptor perches and owl boxes may increase predation.
Ground Squirrels (<i>Otospermophilus beecheyi</i>)	Dig up and shred plants and protectors.	Flooding or disking can reduce populations.
Rabbits and Hares	Browse early spring growth.	Plant protectors will keep the browsing on new plants to a minimum. Plants should resprout with light browsing.
California Mule Deer (<i>Odocoileus hemionus</i>)	Browse new plant growth.	New plantings should resprout with light browsing. If excessive damage persists control measures will need to be addressed.

6. Monitoring

Monitoring and recording management activities and plant response is critical in the adaptive management framework. It is important to respond to new information and changing conditions in order to “close the loop” between monitoring and Project implementation. Current restoration efforts within the San Joaquin River Parkway provide an excellent opportunity to learn lessons about the site and the species planted, however, without scheduled and thorough monitoring and reporting, results can be lost. All restoration plans and projects at Ball Ranch and the Willow Unit should include a monitoring and reporting component to address the implementation of the restoration (survivorship, growth, and plant response to management).

7. Adaptive Management

Adaptive management is critical in the effective implementation of this project. From grant writing to weed control, being adaptive in project management requires paying

careful attention to successes and failures, and learning from those mistakes. Figure 27 presents a general overview of the adaptive management process. Table 13 provides a general timeline for implementation of a typical 3-year restoration project.

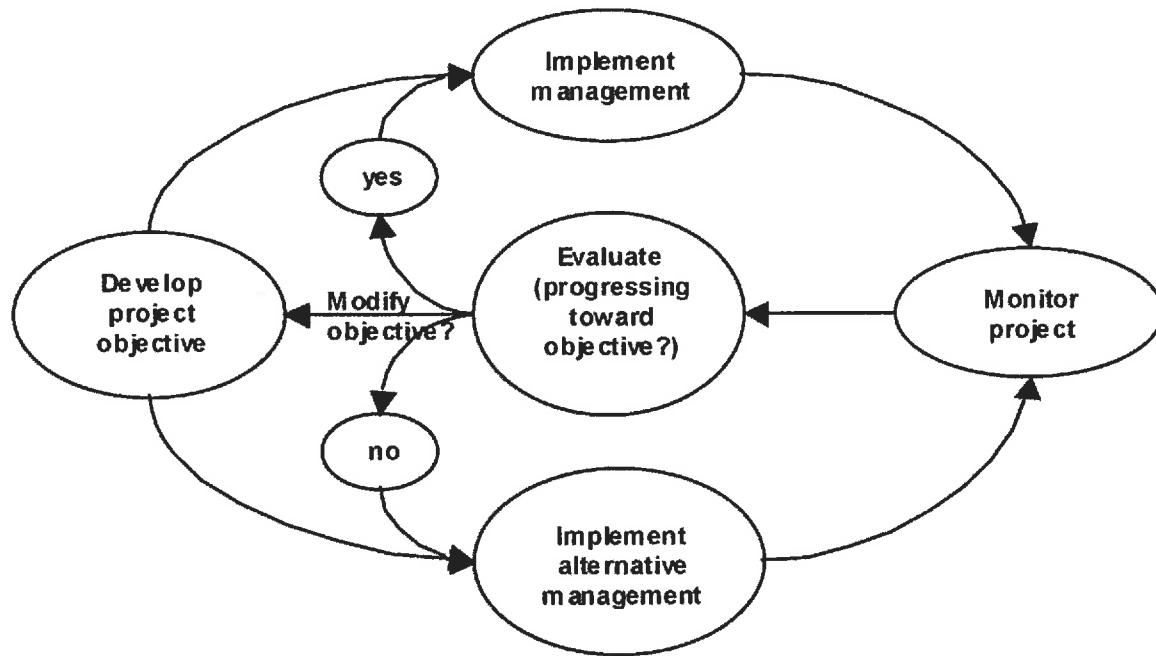


Figure 30. Adaptive Management Model

Table 15. General timeline for restoration implementation

Task	Year 1				Year 2				Year 3			
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
Planning/Permitting												
Field Preparation												
Planting												
Plant establishment												
Monitoring												
Project Management												

VIII. REFERENCES

Ahearn, D.S., J.H. Viers, J.F. Mount, and R.A. Dahlgren. 2006. Priming the productivity pump: flood pulse driven trends in suspended algal biomass distribution across a restored floodplain. *Freshwater Biology* 51:1417-1433.

Birds of North America Online (A. Poole. Ed.). Ithaca: Cornell Laboratory of Ornithology; Retrived from the Birds of North America Online database:
<http://bna.birds.cornell.edu/BNAN/>; November 2016.

Bradbury, M.D. 2009. Friends of the Swainson's Hawk Conservation Strategy for Swainson's Hawks in California. Friends of the Swainson's Hawk, Sacramento, California.

cbec. 2016. Dos Rios Ranch Habitat Restoration Design Support: Design report. Sacramento, California.

CALFED. 1999. CALFED Bay-Delta Program Programmatic EIS, Long-Term Comprehensive Plan to Restore Ecosystem Health and Improve Water Management, San Francisco Bay – Sacramento/San Joaquin River Bay-Delta D, Dsum: Program Goals and Objectives, Dapp1; No Action Alternative,; Environmental Impact Statement, United States. Bureau of Reclemation.

California Trout (CalTrout). 2016. The Nigiri Project: Scaling up a successful program. Retrieved from:
<http://caltrout.org/regions/central-california-region/keystone-initiative-central-valley-fish-and-floodplains/the-nigiri-project/>. November 2016.

Chouinard, T., V. Lyon, B. Barbour, D. Woolington. 1999. San Joaquin River National Wildlife Refuge riparian habitat protection and flood plain restoration project biological inventory and monitoring. US Fish & Wildlife Service, Los Banos, California.

Department of Water Resources (DWR). 2016, November 23. Best Available Maps. Retrieved from gis.bam.water.ca.gov/bam/

Dobkin, D. S., A. C. Rich, AND W. H. Pyle. 1998. Habitat and avifauna recovery from livestock grazing in a riparian meadow system of the northwest Great Basin. *Conservation Biology* 12: 209-221.

Geupel, G.R., N. Nur, A. King, and G. Ballard. 1997. Songbird monitoring on the San Luis National Refuge: Results from the 1996 field season. PRBO unpublished report to the US Fish and Wildlife Service. Stinson Beach, CA.

Hammond, J., R. Chruchwell, and G.R. Geupel. 2002. Songbird monitoring on the San Joaquin River National Wildlife Refuge: Progress report for the 2001 field season. Point Reyes Bird Observatory. Publication Number 966.

Jefferies, C.A., Opperman, J.J., and Moyle, P.B. 2008. Ephemeral floodplain habitats provide best growth conditions for juvenile Chinook salmon in a California river. *Environmental Biology of Fishes* 83:4.

Kentula, M.E., R.P. Brooks, S.E. Gwin, C.C. Holland, A.D. Sherman, and J.C. Sifneos. 1992. *Wetlands: An approach to improving decision making in wetland restoration and creation*. Island Press, Washington, D.C.

Knopf, E L., R. R. Johnson, T. Rich, E B. Samson, and R. C. Szaro. 1988. Conservation of riparian ecosystems in the United States. *Wilson Bulletin* 100:272-284.

Kus, B.E. 1998. Use of restored riparian habitat by the endangered Least Bell's Vireo (*Vireo bellii pusillus*). *Restoration Ecology* 6:1.

Manley, P. and Davidson, C. 1993. A risk analysis of neotropical migrant birds in California. USFWS Report, Region 5, San Francisco, CA.

Mayer, K.E. and Laudenslayer, W.F. 1988. *A guide to wildlife habitats of California*. California Department of Forestry and Fire Protection, Sacramento, CA.

Merz, J., M. Workman, D. Threlhoff, and B. Cavallo. 2013. *Salmon Lifecycle Considerations to Guide Stream Management: Examples from California's Central Valley, San Francisco Estuary and watershed Science*, 11(2).
<http://escholarship.org/uc/item/30d7b0g7#page-1>

MWH. 2003. *Surface Water Storage Option Technical Memorandum: Big Dry Creek Reservoir Modification, Upper San Joaquin River Basin Storage Investigation*.

National Marine Fisheries Service (NMFS). 2014. *Recover plan for the significant units of the Sacramento river winter-run Chinook salmon and central valley spring-run Chinook salmon and the distinct population segment of California Central Valley steelhead*. California Central Valley Office.

Natural Resources Conservation Service (NRCS). "Web Soil Survey of Eastern Fresno County, California". <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>.

Natural Resource Conservation Service (NRCS). 2008. *Engineering Field Handbook, Chapter 13: Wetland restoration, enhancement, or creation*.

Opperman, J.J. and A.M. Merenlender. 2007. Living trees provide stable large wood in streams. *Earth Surface Processes and Landforms*. 32:1229-1238.

Pearson, T.R.H., S. Brown, S. Grimland, K. Goslee, and N. Harris. 2008. Report on the Potential of Carbon Benefits of Riparian Restoration Projects on the San Joaquin River National Wildlife Refuge. Winrock International report submitted to River Partners.

RHJV (Riparian Habitat Joint Venture). 2004. The riparian bird conservation plan: a strategy for reversing the decline of riparian associated birds in California. California Partners in Flight. <http://www.prbo.org/calpif/riparian.v-2.pdf>

Reiner, R.J. 2007. Fire In California Grasslands. In M.R. Stromberg, J.D. Corbin, and C.M. D'Antonio (Eds.), *California Grasslands: Ecology and management* (pp. 207-217). University of California Press, Berkeley, California.

River Partners. 2008. 2008 Monitoring program plan for River Partners. Chico, California.

Saab, V. 1999. Importance of spatial scale to habitat use by breeding birds in riparian forests: A hierarchical analysis. *Ecological Applications* 9: 135-151.

San Joaquin River Conservancy. 2000. San Joaquin river Parkway Master Plan. San Joaquin River Conservancy, Fresno, CA.

San Joaquin River Conservancy. 2005. Executive Summary: Ball Ranch Master Development Plan. San Joaquin River Conservancy, Fresno, CA.

Sawyer, J.O. and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento, CA.

Searcy, C.A. and Shaffer, H.B. 2011. Determining the Migration Distance of a Vagile Vernal Pool Specialist: How much land is required for conservation of California tiger salamanders? Pages 73-87 In: Final report: adult movement behavior and long-term trends in the population dynamics of the central population of the California tiger salamander. Prepared by C.A. Searcy and H.B. Shaffer for Dan Strait, CVP Conservation Program Manager, Bureau of Reclamation, Sacramento. October 13, 2014.

Shaffer, H.B., Fisher, R.N., and Staley, S.E. 1993. Status report: the California tiger salamander (*Ambystoma californiense*). Final report for the California Department of Fish and Game.

Shaffer, H.B., Johnson, J., and Wang, I. 2013. Conservation Genetics of California Tiger Salamanders. Prepared for Dan Strait, CVP Conservation Program Manager, Bureau of Reclamation, Sacramento, California. Final Report. Bureau of Reclamation grant agreement no. R10AP20598.

Shuffard, W.D. and T. Gardalli (Eds). 2008. California Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of bird and immediate conservation concern in California. Western Field Ornithologists and California Department of Fish and Game, Sacramento, California.

Silveira JG, Griggs FT, Burkett DW, Buer KY, Efseaff DS, Golet GH, Small SL, Vega R, and Isola JE. 2002. An ecological approach to restoring riparian habitats at the Llano Seco Unit, Sacramento River National Wildlife Refuge. In: Proceedings of the Riparian Habitat and Floodplain Conference, 12-15 March 2001. Sacramento, California

Small, S.L., J. DeStaebler, G.R. Geupel, and A. King. 1999. Landbird response to riparian restoration on the Sacramento River system: Preliminary results from the 1997 and 1998 field seasons. PRBO report to The Nature Conservancy and US Fish and Wildlife Service. Stinson Beach, CA.

Sommer, T.R., M.L. Nobriga, W.C. Harrell, W. Batham, and W.J. Kimmerer. 2001. Floodplain Rearing of Juvenile Chinook Salmon: Evidence of enhanced growth and survival. Can J Fish Aquat Sci 58:325-333.

Stebbins, RC. 2003. A Field Guide to Western Amphibians and Reptiles. 3rd Edition.

The Nature Conservancy (TNC). 2000. Species management abstract: Bell's Vireo (*Vireo bellii*). <http://conservonline.org/docs/2001/bevi.doc>

URS. 2003. Ball Ranch General Resource Assessment Report: A component of the Ball Ranch Master Development Plan. URS, Fresno. CA.

USFWS. 1984. Valley Elderberry Longhorn Beetle Recovery Plan. US Fish and Wildlife Service, Portland, OR. 62 pp.

USFWS. 1985. Determination of Endangered Status and Critical Habitat for the Fresno Kangaroo Rat. U.S. Fish and Wildlife Service, Portland, OR.

USFWS. 1997. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. U.S. Fish and Wildlife Service, Sacramento, CA.

USFWS. 1998. Draft Recovery Plan for the Least Bell's Vireo. Prepared for the U.S. Fish and Wildlife Service Region 2.

USFWS. 2006. San Joaquin River National Wildlife Refuge. Draft Comprehensive Conservation Plan and Environmental Assessment.

USFWS. 2015. Draft Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California.

Williams, D.F., Cypher, E.A., Kelly, P.A., Miller, K.J., Norvell, N., Phillips, S.E., Johnson, C.D., and Colliver, G.W. 1998. Recovery Plan for the Upland Species of the San Joaquin Valley, California. U.S. Fish and Wildlife Service, Portland, Oregon.

Witham, C.W., Bauder, E.T., Belk, D., Ferren Jr., W.R., and Ornduff, R. (Editors). 1998. Pages 15-23 in: Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference. California Native Plant Society, Sacramento, California.

Woodridge, B. 1998. Swainson's Hawk (*Buteo swainsoni*). In The Riparian Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight: http://www.prbo.org/calpif.html/docs/riparian_v-2.html

Zeiner, D.C., Laudenslayer, W.F., Mayer, K.E., and White, M., editors. 1988. California's Wildlife. Vol. I-III. California Department of Fish and Game, Sacramento, California.

Appendix A - Irrigation Water Analysis Ball Ranch and the Willow Unit

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736



REPORT NUMBER: 16-327-046

CLIENT: 4747-D

SUBMITTED BY: HEYO TJARKS

SEND TO: RIVER PARTNERS
580 VALLOMBROSA AVE
CHICO, CA 95928

GROWER:

DATE OF REPORT: 11/29/16

IRRIGATION WATER ANALYSIS REPORT

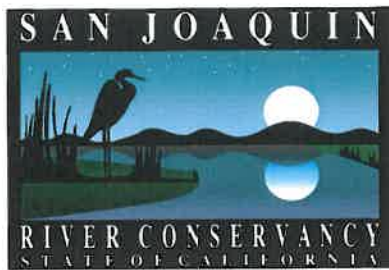
PAGE: 1

Sample ID	Lab Number	Sodium Na meq/L	Calcium Ca meq/L	Magnesium Mg meq/L	Carbonate CO ₃ meq/L	Bicarbonate HCO ₃ meq/L	Chloride Cl meq/L	Conductivity E.C. dS/m	pH	Copper Cu ppm	Iron Fe ppm	Manganese Mn ppm	Zinc Zn ppm
RIVER	67749	0.13	0.15	0.08	0.00	0.28	0.11	0.04	6.1				
POND	67750	1.22	1.85	1.15	0.00	2.77	0.90	0.46	6.8				

Sample ID	Phosphorus P ppm	Potassium K ppm	Nitrate NO ₃ ppm	Sulfate SO ₄ ppm	Boron B ppm	Dissolved Solids ppm	Adjusted S.A.R.	Langelier Saturation Index	NOTES:
RIVER	0.02	0.9	< 2	1	0.03	30	0.16		<p>This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.</p> <p><i>Phoebe Gordon</i> Phoebe Gordon, Ph.D. A & L WESTERN LABORATORIES, INC.</p>
POND	0.14	9.8	< 2	11	0.05	301	1.07		

Appendix B - Vegetation Species List found at Ball Ranch and the Willow Unit

Scientific Name	Common Name
NATIVE	
<i>Amsenckia sp.</i>	Fiddleneck
<i>Baccharis salicifolia</i>	Mulefat
<i>Centromadia pungens</i>	Common tarweed
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Croton setiger</i>	Doveweed
<i>Cucurbita palmata</i>	Coyote melon
<i>Datura wrightii</i>	Jimsonweed
<i>Fraxinus latifolia</i>	Oregon ash
<i>Grindelia camporum</i>	Gumplant
<i>Helianthus annuus</i>	Common sunflower
<i>Heliotropium convolvulaceum</i>	Heliotrop
<i>Heterotheca grandiflora</i>	Telegraph weed
<i>Juncus balticus</i>	Baltic rush
<i>Platanus racemosa</i>	Western sycamore
<i>Populus fremontii</i>	Cottonwood
<i>Quercus lobata</i>	Valley oak
<i>Rubus ursinus</i>	California blackberry
<i>Salix exigua</i>	Sandbar willow
<i>Salix gooddingii</i>	Black willow
<i>Salix laevigata</i>	Red willow
<i>Sambucus nigra</i>	Elderberry
<i>Schoenoplectus californicus</i>	California bulrush
<i>Trichostema lanceolatum</i>	Vinegarweed
<i>Xanthium strumarium</i>	Cocklebur
NON-NATIVE	
<i>Ailanthus altissima</i>	Tree of heaven
<i>Avena occidentalis</i>	Wild oats
<i>Brassica nigra</i>	Black mustard
<i>Bromus diandrus</i>	Ripgut brome
<i>Bromus hordeaceus</i>	Soft chess
<i>Centaurea solstitialis</i>	Yellow star thistle
<i>Eucalyptus sp.</i>	Eucalyptus
<i>Lactuca serriola</i>	Prickly lettuce
<i>Nicotiana glauca</i>	Tree tobacco
<i>Rumex crispus</i>	Curly dock
<i>Sesbania punicea</i>	Rattlebox
<i>Silybum marianum</i>	Blessed milkthistle
<i>Tamarix ramosissima</i>	Tamarisk



SAN JOAQUIN RIVER CONSERVANCY

Agenda Item

Item: G-1

May 2, 2018

TO: San Joaquin River Conservancy Board

FROM: Melinda S. Marks, Executive Officer

SUBJECT: **Report for Informational Purposes by Central Valley Community Foundation on the "Fresno Clean and Safe Neighborhood Parks Initiative," a Potential Local Sales Tax Measure to Fund Parks, Trails, and Recreation Programs in Fresno**

RECOMMENDATION:

Central Valley Community Foundation staff will make an informational presentation about a possible local sales tax measure, currently gathering signatures to qualify for the November ballot, to raise revenue to invest in and support parks, trails, and recreation programs in the city of Fresno. No Board action is recommended.

SUMMARY:

A new advocacy organization, Fresno for Parks (<https://www.fresnoforpark.com>), recently announced a campaign to secure voter approval of a sales tax measure to sustainably fund parks and recreation in the city. Former Assemblymember, Mr. Juan Arambula and former Fresno County Superintendent of Schools, Mr. Larry Powell, co-chairs of Fresno for Parks, expressed their support at a community kick-off event and in Valley Voices in the Fresno Bee on April 15, 2018 (attached).

The proposed Fresno Clean and Safe Neighborhood Parks sales tax measure is the outcome of many community meetings, and the intensive work of parks, trails, greenscape, arts, youth, public health, and diversity and equity advocates, to develop increased, sustained funding for park repairs and maintenance, park safety, new parks—especially in park-poor neighborhoods, the regional trail system, and community recreation and cultural programs, among other direct and indirect benefits. The proposed measure includes some funding for the existing and planned Parkway features within Fresno, such as the Lewis S. Eaton Trail, Riverside Trail and planned Riverbottom Park, Jensen River Ranch and MacMichael Trail, Camp Pashayan, and the approved Eaton Trail extension and public access improvements on the River West site.

Studies by the Trust for Public Land of parks, open space, access, and investments in the 100 largest U.S. cities, found that Fresno has scored at or very near the bottom of the ranking since 2015. After several years of exploring options and planning by a coalition of advocates and activists, and an initial public interest survey by the Trust for Public Land (reported to the Board at its meeting October 4, 2017), the Central Valley Community Foundation secured funding and completed a follow-up survey to determine potential public support for a local sales tax measure

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to generate parks funding. A reliable sample of the community indicated support and a good chance of the measure's success at the ballot.

The Community Foundation also facilitated a series of thorough working meetings to explore and develop the structure of a tax measure: its governance, revenue generation, eligible uses, allocations, accountability, and citizen oversight. The 3/8-cent sales tax within the city of Fresno would raise an estimated \$38 million per year, and cost the average Fresno household \$39 per year, or \$3.25 per month.

The Central Valley Community Foundation was founded in 1966 to provide charitable giving options for individuals, families, businesses and other foundations to invest in programs that address social and environmental needs. The foundation serves over 2.04 million people, encompassing the counties of Fresno, Madera, Mariposa, Merced, Tulare and Kings. Ms. Ashley Swearingen, a former Fresno Mayor, is the president and CEO.

Ms. Danielle Bergstrom, a representative of the Community Foundation, will provide an informational report on the proposed measure, supporters' activities, and the steps necessary to place the measure on the ballot.



The Shinzen Friendship Garden in Woodward Park during the Spring Blossom Festival is a Fresno treasure. **Jessica Rogozinski** Fresno Bee File/2016

Valley Voices

Let's reinvest in Fresno's neighborhood parks

By Juan Arambula And Larry Powell

April 15, 2018 09:25 AM

Updated April 15, 2018 09:25 AM

More than 100 years ago, our city leaders formed the first Parks Commission of Fresno, which helped spearhead the development of Roeding Park, Woodward Park and other green spaces to both vitalize and beautify the community.

These founding leaders understood the crucial role that parks play in the development of a city, and the lasting benefits they would bring to Fresno families for generations to come.

A recent study found that Fresno ranked 90th out of the top 100 cities in the nation when it comes to park access, acreage and investment – and Fresno was the worst in the country from 2013-2015. In 2018 we find ourselves with parks that are run-down, deteriorating and unsafe due to a lack of investment. This needs to be fixed.

When a city values its parks, they become more than a safe place to play and exercise. Parks help strengthen the city's economy, increase property values, and improve the overall health and quality of life for its residents.

Recently, after years of study and community input from thousands of Fresnoans, the Fresno City Council developed and approved the Parks Master Plan, which shows that 80 percent of Fresno's parks are in fair or poor condition.

The Parks Master Plan details the dire needs in our parks system, including millions each year needed to fix existing parks, perform routine maintenance that has gone unattended, provide access to parks for those who lack it and more.

That's why a diverse, bipartisan coalition of parents, seniors, park supporters and community leaders have come together to find a solution and improve local parks. Our solution is the "Fresno Clean and Safe Neighborhood Parks Initiative," which provides a guaranteed, local source of funding that will raise an estimated \$38 million per year to maintain and improve our parks.

Our parks need help, and this initiative will provide it. It will invest in our parks and implement many of the priorities laid out in the Parks Master Plan, focusing on safe and clean neighborhood parks by fixing and maintaining our parks and improving access to quality, usable parks in every neighborhood across the city.

The initiative has detailed plans to improve our parks and make them more usable, including reducing crime and homelessness in parks, updating and maintaining park restrooms, improving accessibility for persons with disabilities, updating playgrounds and sports facilities and bringing parks and recreation centers up to current health and safety standards.

And it has dozens of other vital benefits for our city, such as job training programs for at-risk youth and veterans, after-school and youth recreational programs, arts and cultural programs and safe walking and biking trails.

The measure will ensure that visitors and non-Fresno residents pay their fair share through a 3/8-cent sales tax in the city of Fresno. That's an average of \$39 per household each year – or just \$3.25 each month per household.

The initiative also includes strong provisions for fiscal accountability and citizen oversight. This oversight – a new Parks, Recreation, and Art Commission – will ensure the funding raised through the measure will only be spent on the intended purposes and stays local. Funds cannot be taken by the state or spent on other things.

For many years, civic leaders served our community on a City Parks Commission. This initiative is reviving this important body.

Investing in our local parks helps keep our city a desirable place to live, work and raise a family.

Quality parks are proven to increase property values, reduce crime, and the measure will help improve the local economy and create local jobs.

To join us and thousands of our fellow Fresno's parks, look for us in neighborhoods, at grocery stores, parks and other locations to place your signature on the dotted line to put the Clean and Safe Neighborhood Parks Initiative on the ballot.

Former Assemblymember Juan Arambula and former Fresno County Superintendent of Schools Larry Powell are co-chairs of Fresno for Parks, a diverse group of Fresno residents that believe safer, cleaner parks for all Fresnoans are important to the health, safety and overall quality of life of our community. You can learn more about Fresno for Parks at FresnoforParks.com.

Read more here: <http://www.fresnobee.com/opinion/readers-opinion/article208951169.html#storylink=cpy>




SAN JOAQUIN RIVER CONSERVANCY

Agenda Item

Item: G-2

May 2, 2018

TO: San Joaquin River Conservancy Board

FROM: Melinda S. Marks, Executive Officer 

SUBJECT: **Report for Informational Purposes on County of Fresno Project to Replace the North Fork Bridge on the San Joaquin River in Friant, and Status Report on Demolishing the Derelict Bridge Remnants Near the Same Location**

RECOMMENDATION:

County of Fresno Department of Public Works staff will make an informational presentation at the Board meeting about preliminary plans for the proposed North Fork Bridge Replacement Project and the work they are initiating, and Conservancy staff will provide an update on the status of the Conservancy's River Vista Project within the same area. No Board action is recommended.

SUMMARY:

The County of Fresno has received funding from the Federal Highway Administration for preliminary engineering and environmental review to replace the North Fork Road Bridge over the San Joaquin River. The proposed project will replace the bridge connecting Fresno and Madera counties, located 0.1 miles northwest of Friant Road, adjacent to the community of Friant, and downstream approximately 0.67 miles southwest of the Friant Dam spillway. The County is in the process of securing professional design and environmental services for the proposed project.

The County of Fresno will be closely coordinating the project with the County of Madera, Caltrans, and the Conservancy. The State of California owns land on all four corners of the bridge consisting of the Conservancy's River Vista, Wagner, and Friant Cove properties, and including a remnant parcel on the southwest corner of the Friant Road/North Fork Road intersection. Friant Cove is a developed San Joaquin River Parkway public access site. The Wagner property provides for employee housing for a State Park ranger, and is the planned location of a trailhead for trails leading to the planned North Fork Village. The River Vista property is the site of the Conservancy's planned, approved Parkway public access project, which includes plans to demolish large remnants of a concrete bridge that collapsed in the river during a flood and resulted in construction of the existing bridge in 1952.

The new bridge is proposed to be built on an alignment adjusted slightly downstream of the existing bridge, on the Conservancy's River Vista project site. Although the County will need to acquire lands from the State, the County's preliminary design indicates its bridge replacement

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project will not encompass the area of the broken bridge remnants nor be located within the footprint of the River Vista parking and public access facilities. The new bridge and roadway will be designed to leave the Friant Road/North Fork Road intersection and Friant Cove largely unaffected.

In the meantime, Conservancy staff has been in discussions with the County of Madera Department of Public Works and Department of Planning to develop a grant for the County to secure permits and perform demolition of the broken bridge. While the broken bridge demolition would take only two or three months of active site work and would only require a small work pad within the river, fairly extensive permits and approvals are required, including permits from the U.S. Army Corps of Engineers and the Central Valley Regional Water Quality Control Board, a lease from the State Lands Commission, and agreements with the Central Valley Flood Protection Board and California Department of Fish and Wildlife.

The right-of-way acquisition, permits, designs, and timeframes for the bridge replacement, broken bridge demolition, and River Vista development must be coordinated among the agencies to achieve the most effective results.

DISCUSSION:

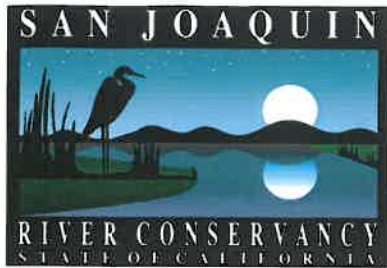
The County's bridge project was initially scoped as a scour repair/bridge rehabilitation project; however, under further investigation it was determined that replacement of the bridge is required. Tentatively, the new bridge will be a 575 to 600-foot long cast-in-place pre-stressed box girder bridge with two 12-foot travel lanes, two 8-foot shoulders, and 400-foot approach roadways. During construction, the existing bridge will remain in place as a detour and then be removed upon the completion of the new bridge.

Construction of the existing North Fork Road Bridge was completed in 1952. During the 1997 flood event, the bridge was overtopped by approximately 6 feet of water and the approach roadways were washed out. The bridge is 66 years old and nearing the end of its service life.

The first bridge across the San Joaquin River at Friant was constructed of wooden trusses in 1883 and was named after Swedish opera singer Jenny Lind. The Jenny Lind Bridge, built at a cost of \$10,000, was only wide enough to allow one wagon at a time to cross. In 1905, deemed frail and dangerous, it was ordered to be demolished.

The following year, Fresno County's first reinforced concrete arched bridge, the Pollasky Bridge, was built at the same site for \$30,000. Originally thought to be indestructible, the Pollasky Bridge was scheduled to be replaced due to a damaged piling from the San Joaquin River flood of 1937. Ultimately, the Pollasky Bridge collapsed in 1952. Broken remnants of the Pollasky Bridge on the Madera County side of the San Joaquin River are still scattered in the channel today.

December 16, 2015, as a part of approval of the River Vista Project, demolition of the broken bridge has approved by the Conservancy Board in accordance with the California Environmental Quality Act in order to eliminate hazards for recreational boating, eliminate an attractive nuisance, and prepare for public access at River Vista.




SAN JOAQUIN RIVER CONSERVANCY

Agenda Item

Item: G-3

May 2, 2018

TO: San Joaquin River Conservancy Board

FROM: Melinda S. Marks, Executive Officer 

SUBJECT: **Status Report for Informational Purposes on Assembly Bill 3218, Authored by Assemblymember Dr. Joaquin Arambula**

RECOMMENDATION:

This item is presented for informational purposes only. No Board action is recommended.

SUMMARY:

AB 3218 introduced by Assembly Member Dr. Joaquin Arambula, would require the California Department of Parks and Recreation to "effectively manage lands currently within its jurisdiction in the Millerton Lake State Recreation Area adjacent to the San Joaquin River, and to take action to acquire approximately 5,900 acres" on both sides of the river between Friant Dam and Highway 99. The bill as amended prohibits the use of eminent domain to acquire any lands. A Fact Sheet provided by Assemblyman Arambula's office reports that the bill is intended to provide for State Parks to operate and maintain the San Joaquin River Parkway.

The bill was introduced February 17, 2018, and subsequently amended. The bill as of the date of preparation of this staff report and its Fact Sheet are attached. The bill is scheduled to be heard by the Assembly Committee for Water, Parks, and Wildlife on April 24.

A verbal update will be provided at the Board meeting.

Attachments



ASSEMBLYMEMBER DR. JOAQUIN ARAMBULA, 31ST DISTRICT

AB 3218 –Millerton Lake State Recreation Area: expansion. – As Amended

Summary

In 1992, The San Joaquin Conservancy Act (AB 2452) created the San Joaquin River Conservancy with a mission of “acquiring approximately 5,900 acres from willing sellers; developing, operating, and managing those lands for public access and recreation; and protecting, enhancing, and restoring riparian and floodplain habitat.” For 26 years, there have been efforts to create a River Parkway from Friant Dam to Highway 99 along the San Joaquin River.

Background

The area along the San Joaquin River has long been envisioned as a Parkway where residents of the San Joaquin Valley can enjoy the natural landscapes created by the San Joaquin River.

AB 2452, The San Joaquin River Conservancy Act, by Jim Costa created the San Joaquin River Conservancy to develop and manage the San Joaquin River Parkway, a planned 22-mile natural and recreational area in the floodplain extending from Friant Dam to Highway 99.

The Conservancy is governed by a fifteen-person board, four of whom are elected officials. The chairperson of the board rotates every two years among the mayor or designated council member of the City of Fresno, the member of the Board of Supervisors of Madera County, and the member of the Board of Supervisors of Fresno County.

There are six members representing various state agencies, including the California Parks Department, and three citizen representatives on the board.

The San Joaquin River Conservancy is funded from three sources: the San Joaquin River Conservancy Fund, the Environmental License Plate Fund, and several bond funds approved by state voters.

These bonds are prioritized for acquiring lands for conservation and recreation in the Parkway from willing sellers.

AB 3218 will not change the way land is acquired and specifically states action is to be taken only if lands adjacent to the river are offered for sale. The bill also prohibits the department from using the power of eminent domain to acquire any additional lands for the recreation area pursuant to the bill.

The idea to make the San Joaquin River a state park is not new. In 2009, a report issued by the California State Parks Department called for partnering with the San Joaquin River Conservancy to establish a new park with campsites, picnic sites, trails, boating facilities, and interpretive services. AB 3218 is an attempt to make this a reality.

The intent of incorporating the area along the river with the existing Millerton State Recreation Area is to allow more operation and maintenance funds to be funneled through the California State Parks Department.

This bill

This bill would extend the Millerton State Recreational Area to include the areas of the San Joaquin River Parkway currently managed by the San Joaquin River Conservancy. This would allow for operation and maintenance to be handled by the California Parks Department through the Millerton State Recreation Area.

Related Legislation

San Joaquin River Conservancy. Chapter 1012 of 1992 (AB 2452, Costa)

Parks and nature education facilities: Central Valley Vision. Chapter 546 of 2007 (AB 1426, Wolk)

For More Information Call

Arturo Barajas
916-319-2031
arturo.barajas@asm.ca.gov



AB-3218 Millerton Lake State Recreation Area: acquisition of land. (2017-2018)

SHARE THIS:



Date Published: 04/03/2018 04:00 AM

AMENDED IN ASSEMBLY APRIL 02, 2018

CALIFORNIA LEGISLATURE—2017–2018 REGULAR SESSION

ASSEMBLY BILL

No. 3218

Introduced by Assembly Member Arambula

February 16, 2018

An act to add Section 5005.2 to the Public Resources Code, relating to state parks.

LEGISLATIVE COUNSEL'S DIGEST

AB 3218, as amended, Arambula. Millerton Lake State Recreation Area: ~~expansion~~ acquisition of land.

Existing law designates all parks, public campgrounds, monument sites, landmark sites, and sites of historical interest established or acquired by the state, or that are under its control, as the state park system, except as specified. Under existing law, the Department of Parks and Recreation controls the state park system, which is made up of units, one of which is the Millerton Lake State Recreation Area.

This bill would require the department to ~~take all necessary action to acquire lands to expand~~ effectively manage lands currently within its jurisdiction in the Millerton Lake State Recreation Area ~~to include adjacent to~~ the San Joaquin ~~River~~ River, and to take action to acquire approximately 5,900 acres adjacent to the river, as ~~specified~~ specified, if those lands, or any portion of those lands, are offered for sale. The bill would prohibit the department from using the power of eminent domain to acquire any additional lands for the recreation area pursuant to the bill.

This bill would make legislative findings and declarations as to the necessity of a special statute for purposes of expanding the Millerton Lake State Recreation Area.

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: no

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 5005.2 is added to the Public Resources Code, to read:

5005.2. (a) The department shall ~~take all necessary action to acquire lands to expand~~ effectively manage lands currently within its jurisdiction in the Millerton Lake State Recreation Area ~~to include adjacent to~~ the San Joaquin ~~River and~~ River, and shall take action to acquire approximately 5,900 acres adjacent to both sides of the San

Joaquin River between Friant Dam and ~~the Highway-99-crossing:~~ 99, if those lands, or any portion of those lands, are offered for sale.

(b) The department shall not use the power of eminent domain to acquire any additional lands for the recreation area pursuant to this section.

SEC. 2. The Legislature finds and declares that a special statute is necessary and that a general statute cannot be made applicable within the meaning of Section 16 of Article IV of the California Constitution because of the unique need to expand the Millerton Lake State Recreation Area.



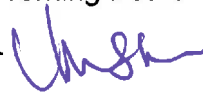
SAN JOAQUIN RIVER CONSERVANCY

Agenda Item

Item G-4

May 2, 2018

TO: San Joaquin River Conservancy Governing Board

FROM: Melinda S. Marks, Executive Officer 

SUBJECT: Authorize Bond Funds and a Grant to the San Joaquin River Parkway and Conservation Trust to Contribute to the Coke Hallowell River Center Public Access Improvements Project

RECOMMENDATION:

It is recommended the Board approve \$400,000 in bond funds and a grant agreement with the San Joaquin River Parkway and Conservation Trust (Parkway Trust) to implement elements of the River Center Vision Plan for the Coke Hallowell Center for River Studies (River Center), contributing toward a public access improvement project totaling \$1.7 million, with the balance of funds secured from other sources by the Parkway Trust. Wildlife Conservation Board (WCB) authorization would be requested at their August 2018 meeting.

SUMMARY:

The River Center has been open to the public daily since 2002. Developed and operated by the Parkway Trust, the River Center includes a restored historic ranch house with a barn and outbuildings, outdoor event areas, a nature trail around a wetland pond, trailhead and parking facilities, a segment of the Lewis S. Eaton trail (the planned Parkway-wide trail), and the Parkway Trust's headquarters office building. Thousands visit the River Center each year, as individuals on bike, on foot, and by vehicle, and many children participate in a version of River Camp at the site designed specifically for younger children.

The proposed implementation of elements of the River Center Vision Plan will include visitor amenities and outdoor exhibits designed to expand the Parkway Trust's visitor capacity, educate visitors about the Valley's cultural and natural history, and increase the public's understanding of the complex issues involved with restoring salmon to the San Joaquin River. Project elements (both those proposed to be funded by the Conservancy and those from other sources) include: reconstruction of the existing dairy barn; construction of an interactive water table with hands-on stations that illustrate the complex functioning of the San Joaquin River; a large picnic shelter; a solar power system to serve the entire site; and a native plant garden. (Proposal attached; detailed project description begins page 6.)

In the grant agreement, the Parkway Trust will commit to long term operations and maintenance of the new facilities. The solar power system will not only reduce the energy use and carbon footprint of this large public Parkway facility, but will also help to offset the costs of the Parkway Trust's added long-term operations and maintenance obligations generated by the grant project. The Parkway Trust has secured \$1.3 million in other, non-State funds, resulting in 77% matching funds and 23% requested grant funding.

The River Center is a key component of recreation, education, and visitor services within the San Joaquin River Parkway as it exists today, and as it is planned to eventually encompass thousands of acres for conservation, public access to the river, low-impact recreation, and environmental, historical, and cultural resources education. The Parkway Trust's mission is dedicated to advocating for public access to the San Joaquin River and supporting the development of the San Joaquin River Parkway, in close alignment with the Conservancy's statutory mission and the San Joaquin River Parkway Master Plan.

DISCUSSION:

Location

The River Center is located at 11605 Old Friant Road, near the intersection of Friant Expressway and Copper Avenue. The 20-acre site is comprised of the restored 1890's Riverview Ranch house, gardens, picnic area, nature trail, public restrooms, and trailhead/staging area for the Lewis S. Eaton trail. The project will be integrated into the grounds at the ranch. Access to the project site is provided from Friant Expressway, a four-lane road that parallels the San Joaquin River between State Highway 41 and the town of Friant, and by bike, on foot, or horseback from the Lewis S. Eaton multi-use trail, the completed segment of the planned Parkway-wide multi-use trail. (Please see figures and maps in the attached proposal.)

Project Goals and Objectives

Existing facilities and planned improvements at the River Center are reflected in the recently adopted Parkway Master Plan Update (see attached, pages 13-15). The proposed Project is consistent with the Parkway Master Plan, including the following goals and policies in the plan:

- INTERP 1: Develop Parkway exhibits, interpretive walks and trails, programs, outdoor classrooms, and self-guided brochure tours.
- INTERP 5: Provide education programs for people of all ages and abilities.
- INTERP 6: Develop public education elements in all Parkway projects, facilities and programs.
- INTERP 7: Utilize educational and recreational programs developed by volunteer, school, and nonprofit organizations in the area to provide public outreach.
- ACCESS 2: Minimize potential impacts to sensitive natural resources by grouping facilities and intensive uses or siting facilities and intensive uses in areas that are already disturbed or developed where feasible.
- AIR 6: Work to minimize the greenhouse gas footprint, energy, and water use of Parkway operations, Conservancy and grant projects.
- HABITAT A: Conserve, enhance, restore, and provide for public enjoyment of the aquatic, plant, and wildlife resources of the San Joaquin River Parkway.
- HABITAT 3: Establish, through purchase, easements, or other mutually satisfactory arrangements, natural resource conservation areas, open space, and a continuous wildlife corridor along the river to facilitate the movement of large mammals between habitat areas, to provide a variety of nesting and foraging areas, and to enhance and protect the aquatic habitats of the river and associated wetlands.
- HABITAT 5: Control and remove exotic plant species from the Parkway, including the river channel, where they threaten to displace native plant species or disrupt natural plant community structure.

- HABITAT 7: Enhance, restore, and maintain native vegetation, riparian, wetland, woodland, and grassland habitats within natural reserves, open spaces, and wildlife corridors.
- HABITAT 24: Reestablish to the extent possible a continuous corridor of riparian vegetation on both sides of the river to provide for the movement and migration of wildlife, as well as the restoration and improvement of in-stream shaded habitat.

The River Center project site is contiguous with the Lewis S. Eaton Trail, the existing segment of the planned Parkway-wide multi-use trail. The site provides access to the Owl Hollow project, an educational facility currently under construction by the River Parkway Trust through funding from the Conservancy. The site is near the Conservancy's 320-acre Gibson property, which is planned to eventually be developed for Parkway purposes.

Budget and Funding

The detailed budget (attachment, page 3) has been rounded up to total \$400,000. The Conservancy's funding will provide for the picnic shelter and tables; most of the funding for the solar power system; permanent water education interactive exhibits; a native plant garden near the new picnic area; a minor amount for permits; and project management (10%) and contingency (10%).

The proposed project is an eligible use of Conservancy bond funds. Bond funds are appropriated in WCB's budget to be directed to projects at the Conservancy Board's discretion for land acquisition, and habitat enhancement, public access, and recreation capital improvements. Balances totaling approximately \$26.9 million remain in the Conservancy's voter-approved bond funds from the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act (Proposition 12, 2000), the Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Bond Act (Proposition 40, 2002), and the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act (Proposition 84, 2006). The WCB will determine which of the appropriations will be used. (The unobligated total does not include Proposition 1 watershed protection and restoration funds.)

Schedule

The proposed project is essentially shelf-ready. Engineering, design and California Environmental Quality Act (CEQA) compliance for the proposed project are complete. Some permits for building, etc., must be secured. The proposed grant will provide for a duration of two years for completion.

Long Term Management

The Trust is headquartered at the Coke Hallowell Center for River Studies and has already made a significant, sustained commitment to operate and maintain the site for public use. Operations revenue to maintain the improvements will be created from rentals of the River Center site for parties and events, and fee-based programs such as nature walks, canoe tours, field trips, and River Camp. The proposed solar power system will help the Trust offset and afford the added long-term operations and maintenance commitments generated by this project.

Priorities

The proposed project was ranked among the Conservancy's high near-term priorities recommended by the Interagency Project Development Committee and accepted by the Board in May 2014. The prioritization criteria most relevant to the proposed project include: a committed operator; public demand; minimal environmental impacts/many benefits; connectivity

for trails, public uses, and habitat; project readiness; independent function; achieves long-term benefits; demonstrates Parkway success; and a high degree of outside, matching funding. The Parkway Trust has developed a strong advocacy community of volunteerism and charitable giving.

CEQA Compliance

The River Center is designated and approved as a high intensity park and operates under Conditional Use Permits (C.U.P.s) issued by the County of Fresno. The original C.U.P. for the River Center (2002) was updated in 2006 as part of the review process for the construction of the Parkway Trust's headquarters office building. (Initial Studies 4567 and 5551; C.U.P.s 2923 and 3164; State Clearinghouse No. 2006101009). Construction of the project elements will not change the use of the site or capacity of the site; therefore, no additional discretionary approvals are required by the local land use/lead agency. The project will require ministerial permits from the County to build the project elements. Upon Board approval, staff will file CEQA compliance documentation for the proposed grant, relying on the CEQA process and information prepared by the County and the County's determinations as lead agency.

Attachment 1: River Parkway Trust Proposal, River Center Public Access Improvements Project



River Center Public Access Improvements Project

Located in Fresno County

Submitted to the San Joaquin River Conservancy by the San Joaquin River Parkway & Conservation Trust, Inc., a 501(c)3 nonprofit organization

11605 Old Friant Road, Fresno, CA 93730

Contact for this proposal: Sharon Weaver, Executive Director

Phone: (559) 248-8480 extension 105

FAX: (559) 248-8474

Email: sweaver@riverparkway.org

the design and permitting process on the barn, and selected Zumwalt Construction as the barn contractor. The Trust also successfully garnered grant funding from the Whitney Foundation to contribute to the barn reconstruction. A grant from the San Joaquin River Conservancy will provide funding for the additional River Center improvements identified in the River Center Vision Plan. The River Center Vision Plan and this grant proposal includes components approved by the County of Fresno in compliance with the California Environmental Quality Act (State Clearinghouse Numbers 2006101109).

Project Budget

River Center Public Access Improvements Project Budget						
Description	Quantity	Cost	Total Cost	Other Funding Source	SJRC Request	
1 River Center Improvements						
Picnic Shelter & Tables	1	\$ 195,000	\$ 195,000		\$	195,000
Solar Power System	1	\$ 100,000	\$ 100,000	\$ 20,000	\$	80,000
Barn Reconstruction	1	\$ 1,172,095	\$ 1,172,095	\$ 1,172,095	\$	-
Water Play Table	1	\$ 20,000	\$ 20,000		\$	20,000
Native Plant Garden	1	\$ 30,000	\$ 30,000		\$	30,000
3 Preconstruction Costs						
Engineering & Design		\$ 100,050	\$ 100,050	\$ 100,050	\$	-
CEQA/Permitting		\$ 18,965	\$ 18,965	\$ 13,965	\$	5,000
4 Project Management		\$ 33,000	\$ 33,000		\$	33,000
5 Contingency 10%		\$ 33,000	\$ 33,000		\$	33,000
Total			\$ 1,702,110	\$ 1,306,110	\$	396,000

Detailed Project Description/Scope of Work

The River Center Public Access Improvements project includes visitor amenities and outdoor exhibits designed to expand the Trust's visitor capacity, educate visitors about the Valley's cultural and natural history, and increase the public's understanding of the complex issues involved with restoring salmon to the San Joaquin River. Project elements include: reconstruction of the existing dairy barn; construction of an interactive water table with hands-on stations that illustrate the complex functioning of the San Joaquin River; a large picnic shelter; solar power system to serve the entire site; and native plant garden. The solar power system will help to offset the costs of the Trust's added long-term operations and maintenance obligations generated by the grant project and reduce the carbon footprint of this public Parkway facility.

Project Location

All project activities will occur on land owned and managed by San Joaquin River Parkway and Conservation Trust. The River Center is located at 11605 Old Friant Road, near the intersection of Friant Expressway and Copper Avenue. Please see attached Project Map.

stabilize our weathered dairy barn and transform it into an engaging space for storytelling, connecting it to the Parkway's Lewis S. Eaton Trail.

- **Gather the community...**by building a covered picnic shelter for our River Camp programs and family group activities.
- **Advance the San Joaquin River Parkway...**drawing upon our experience and expertise we will continue our work to implement the San Joaquin River Parkway Master Plan and its trail system;
- **Expand outdoor recreation and education programs...**to diverse families of the Valley; providing opportunities for children and adults to develop a long-term personal connection to the San Joaquin River and its stewardship.

Over the past few years the Trust has implemented program goals of the River Center Vision Plan by expanding our field trip program at the River Center to include not just 4th grade, but also field trip experiences for preschool through 6th grade students. Funding from the Conservancy for the included public access improvements will allow the Trust to expand field trip opportunities by providing weather-protected space for groups of all sizes.

River Center Name and Geography

River Center is the Trust's short handle name for the Coke Hallowell Center for River Studies. The River Parkway Trust's board of directors selected this name to recognize Coke Hallowell for her early vision to restore the old ranch buildings as an interpretive center and include it in plans for the emerging San Joaquin River Parkway.

The restored ranch house was built in 1890 by William Macca Williams, a pioneering commercial nurseryman, and over its history of more than a dozen decades, the ranch has had a few names, varied in size, and had many owners. By 1920, the target year of the ranch house restoration, it was about 350 acres and owned by the Phillips Family; they named it River Ranch. In the mid-20th century its name was changed to Riverview Ranch, which it is often still called today. By the 1980's the Rank family owned the property and it was part of their ranch, El Rancho Del Rio San Joaquin, which takes its name from the nomenclature used for Spanish land grants made along many of California's rivers. For the Trust today, the size and shape of the River Center property is flexible; it can be expanded as willing seller opportunities present themselves and as we advance our land conservation goals and mission.

Today, the River Center consists of 54 acres of land owned and operated by the San Joaquin River Parkway and Conservation Trust as the Coke Hallowell Center for River Studies. It is anchored by the historic Williams-Phillips ranch house. The River Parkway Trust restored the historic home with help from numerous partners and a grant from the Conservancy and WCB, and opened it to the public as an interpretive center in 2002. This dramatic restoration effort was made possible by a lead gift of land from Vulcan Materials Company. Seeing the vision for the property as part of the San Joaquin River Parkway, the company donated the declining ranch buildings along with 20 acres to the Trust in 2001.

Mission and Accomplishments

The mission of the San Joaquin River Parkway and Conservation Trust is *to preserve and restore San Joaquin River lands having ecological, scenic or historic significance, to educate the public on the need*

- B. Picnic Shelter Construction. The picnic shelter is sized to function as a large group gathering area, and a lunch area for school groups during field trips to the River Center.
- C. Solar power system. The solar power system will be sized to contribute 100% of the electrical energy used at the River Center.
- D. Exhibit design and construction. The exhibit included in this proposal is an interactive watershed model/water play table just outside of the new barn. The preliminary design of the exhibit is complete (see Stakeholder Support).
- E. Native Plant Garden. The native plant garden will include wildlife-friendly California native plants including both canopy and understory species. The native plant garden will enhance the River Center's existing Open Space Preserve designation under the Williamson Act, by implementing recommendations to improve wildlife habitat by planting native trees and shrubs in some of the currently un-vegetated portions of the River Center. The plantings will provide drought-tolerant and native landscaping in the vicinity of the new picnic shelter.

Long Term Management/O&M Commitment

The Trust is headquartered at the Coke Hallowell Center for River Studies and has already made a significant commitment to operate and maintain the site for public use. Operations revenue to maintain the improvements will be created from rentals of the river center site for parties and events, and fee-based programs such as nature walks, canoe tours, field trips, and river camp.

The proposed solar power system will help the Trust offset and afford the added long-term operations and maintenance commitments generated by this project.

CEQA, environmental and land use compliance

The River Center is designated as a high intensity park and operates under a Conditional Use Permit (CUP) issued by Fresno County. The CUP for the River Center was updated in 2006 as part of the review process for the construction of the Trust's headquarters office building. Initial study 5551 and CUP 3164 were processed in 2006; the mitigated negative declaration for the River Center was completed under State Clearinghouse number 2006101009. The original CUP for the River Center was processed in 2000 as EA 4567 and CUP 2923.

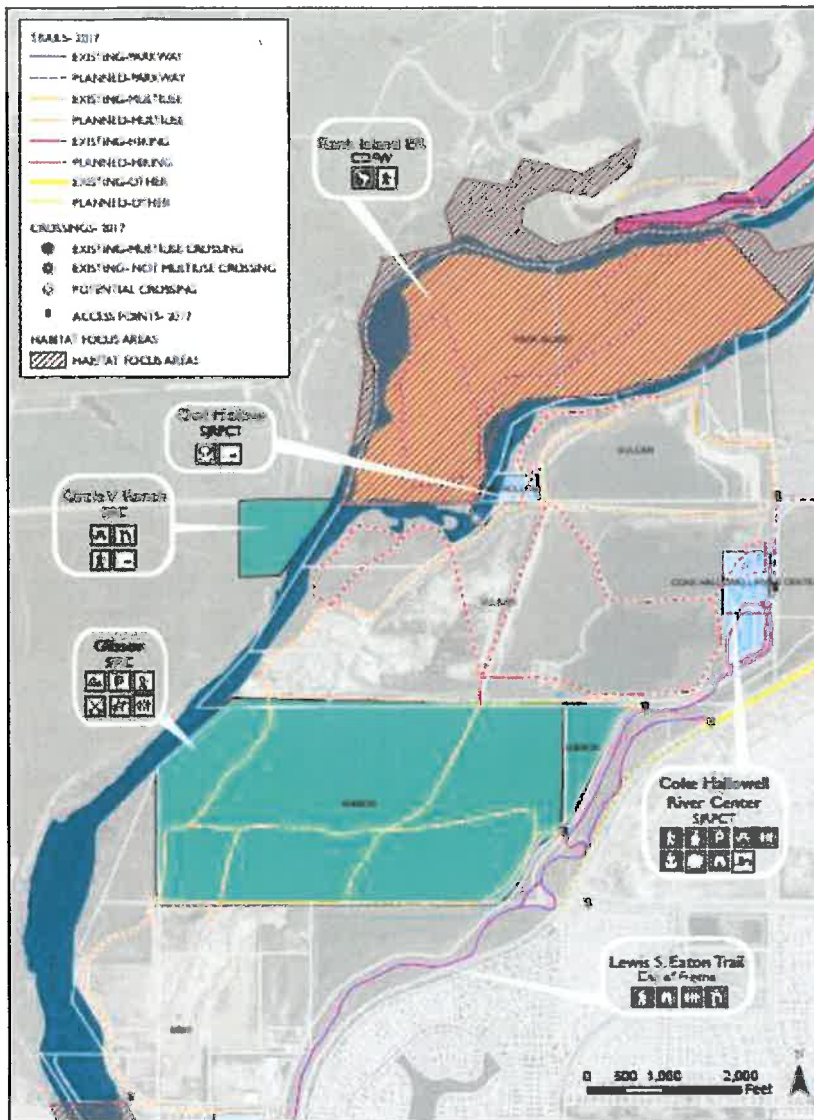
Permitting for the barn reconstruction did not require any additional CEQA compliance, but did require a historical review due to the age of the barn, site plan review, and plan check. Since the construction of the picnic shelter and solar array will not change the use of the site or the number of parking spaces (related to number of visitors on site at any one time), the project will require construction permits but no additional CEQA compliance.

San Joaquin River Parkway Master Plan Component	River Center Public Access Improvement Objectives
Conservation of Natural and Cultural Resources	
<ul style="list-style-type: none"> HABITAT A: Conserve, enhance, restore, and provide for public enjoyment of the aquatic, plant, and wildlife resources of the San Joaquin River Parkway. HABITAT 3: Establish, through purchase, easements, or other mutually satisfactory arrangements, natural resource conservation areas, open space, and a continuous wildlife corridor along the river to facilitate the movement of large mammals between habitat areas, to provide a variety of nesting and foraging areas, and to enhance and protect the aquatic habitats of the river and associated wetlands. ACCESS 2: Minimize potential impacts to sensitive natural resources by grouping facilities and intensive uses or siting facilities and intensive uses in areas that are already disturbed or developed where feasible. AIR 6: Work to minimize the greenhouse gas footprint, energy, and water use of Parkway operations, Conservancy and grant projects. 	<ol style="list-style-type: none"> Interpretive programs at the River Center directly promote the preservation and enjoyment of aquatic, plant, and wildlife resources of the San Joaquin River Parkway. The River Center is an Open Space Preserve under the Williamson Act and includes specific wildlife habitat commitments. This project will improve wildlife habitat by planting a native garden at the River Center. The project is located within an area already utilized for more intensive public uses and has the infrastructure to accommodate a high level of visitation. The project will provide for solar energy to replace nonrenewable energy use and reduce the greenhouse gas footprint.
Habitat Conservation and Enhancement	
<ul style="list-style-type: none"> HABITAT 5: Control and remove exotic plant species from the Parkway, including the river channel, where they threaten to displace native plant species or disrupt natural plant community structure. HABITAT 7: Enhance, restore, and maintain native vegetation, riparian, wetland, woodland, and grassland habitats within natural reserves, open spaces, and wildlife corridors. HABITAT 24: Reestablish to the extent possible a continuous corridor of riparian vegetation on both sides of the river to provide for the movement and migration of wildlife, as well as the restoration and improvement of in-stream shaded habitat. 	<p>The River Parkway Trust will manage exotic species and enhance existing habitat by planting additional native species at the River Center.</p>
Education, Recreation and Public Access	
<ul style="list-style-type: none"> INTERP 1: Develop Parkway exhibits, interpretive walks and trails, programs, outdoor classrooms, and self-guided brochure tours. INTERP 5: Provide education programs for people of all ages and abilities. INTERP 6: Develop public education elements in all Parkway projects, facilities and programs. INTERP 7: Utilize educational and recreational programs developed by volunteer, school, and nonprofit organizations in the area to provide public outreach. 	<ol style="list-style-type: none"> River Center public access improvements will allow the Trust to reach more people with environmental education programs by providing weather-protected venues for large group activities. River Center public access improvements includes interactive exhibits that will be used by during school field trips.

provide power to the 20-acre River Center site. Placing the array on the roof of a picnic shelter required the shelter to be very large, but avoided the possibility of a ground-mounted system that would detract from a visitor's experience of the historic property.

The Trust's Board approved a resolution for the River Center Public Access Improvements Proposal at the March 2018 meeting. The resolution is attached.





**RESOLUTION No. 18-01 of the Board of Directors of the
San Joaquin River Parkway and Conservation Trust, Inc.
Approving the Application for Grant Funds from the San Joaquin River Conservancy and
Wildlife Conservation Board for the River Center Public Access Improvements Project**

WHEREAS, the San Joaquin River Conservancy and California Wildlife Conservation Board have funds available for public access improvements along the San Joaquin River; and

WHEREAS, the San Joaquin River Parkway & Conservation Trust, Inc. has proposed to construct additional improvements at the Coke Hallowell Center for River Studies, also known as the River Center; and

WHEREAS, we consider the prospects of receiving a grant to be reasonably likely;

NOW, THEREFORE, BE IT RESOLVED that the San Joaquin River Parkway and Conservation Trust, Inc. hereby:

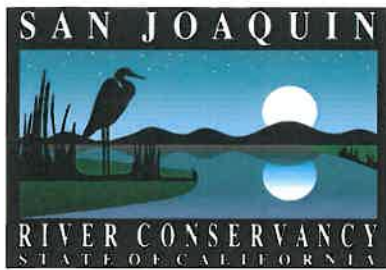
1. Approves the filing of an application for funding from the San Joaquin River Conservancy and Wildlife Conservation Board; and
2. Certifies that the San Joaquin River Parkway and Conservation Trust, Inc. will comply with all federal, state and local environmental, public health, and other appropriate laws and regulations applicable to the project and will obtain or will ensure that other project partners obtain all appropriate permits applicable to the project; and
3. Further commits to the terms and conditions specified in the grant agreement; and
4. Appoints the Executive Director of the San Joaquin River Parkway and Conservation Trust, Inc. or his/her designee to conduct negotiations, execute, submit and sign all documents including but not limited to applications, agreements, amendments, payment requests, and other documents which may be necessary for the completion of the proposed project.

Certification of the Secretary

I hereby certify that I am the presently elected and acting Secretary of the San Joaquin River Parkway and Conservation Trust, Inc., a California Nonprofit Corporation, and the above Resolution was duly adopted at a meeting of the Board of Directors held on the 28th day of March, 2018, at Fresno, California.



Julia O'Kane, Secretary




SAN JOAQUIN RIVER CONSERVANCY

Agenda Item

Item: H-3a

May 2, 2018

TO: San Joaquin River Conservancy Board

FROM: Melinda S. Marks, Executive Officer 

SUBJECT: **River West Fresno, Eaton Trail Extension Work Group, Report on Meeting of April 23, 2018**

SUMMARY: The meeting summary is not available. Staff will provide a verbal report.

AGENDA:

Meeting: April 23, 2018, 3:30 p.m.
Fresno Metropolitan Flood Control District

1. Introductions
2. Additions to Agenda, time constraints for the meeting
3. SJRAC status report on
 - i. Securing a geotechnical/engineering consultant, scope of work (design, post closure land use plan), timelines
 - ii. Continued status reports and discussion of
 - a. Requirements for the pose-closure land use plan
 - b. Report on Health and Safety Plan to be prepared prior to construction
4. SJRAC report on negotiations with Mr. Spano to revise easement, regarding approval of improvement plans, operations
 - i. Discussion of rights that must be secured to develop improvements and assure public access
 - ii. Discussion of easement's affect on potential State purchase
5. Report on operations and maintenance considerations (focusing on core project elements), rough cost, revenues, and funding resources
6. Report on issues associated with FMFCD facilities and ownership
7. Set next meeting date, time place. Identify work to be conducted in the next month. Identify any additional work group members.

May 2, 2018
Agenda Item H-3a